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A LAND USE PROGRAM FOR THE FEDERAL GOVERNMENT[1]

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There are many straws in the current economic and governmental winds which indicate that the Federal Government may in the not distant future take steps to initiate a definite and embracing national program of land use planning. There is no need to discuss here the forces which have contributed to this change in direction of public sentiment. It is evident that the nation has continued too long with its historic policy of unlimited, undirected and often wasteful land use. One of the essentials for a stable, sufficient and efficient agriculture is a definite land policy which will make our land resources responsive to new and changing conditions. If the straws tell a true story, then there is a challenge to, and perhaps some responsibility upon, workers in the fields of agricultural economics, land economics, and related technical and administrative organizations to understand the background of this movement and to offer in a modest way their assistance and scientific judgments. This paper is based upon the assumption that public opinion on land utilization is crystallizing, and that new types of national and state action are approaching. The subject will be discussed from three points of view.

1. Economic-Political Background.
2. Content and Limitations of a National Land Use Program.
3. Suggestions for the Administration Set-Up of a New Federal Land Use Policy.

[1] This paper was read at the Twenty-third Annual Meeting of the American Farm Economic Association, Cincinnati, Ohio, December 28, 1932.

Present Economic and Political Background for a National Land Use Program

Since the World War there has been a continuous and healthy growth of ideas having to do with rationalized land use in the public opinion of this country. Great progress has been made in gathering factual material and developing research technique. Skilled technical research workers have been developed in land economics as well as in related fields. Land economics has been given a respected position in both federal and state institutions dealing with agriculture. The economists in the field of land utilization have formed working arrangements with related technical and administrative groups. A modest beginning in land use planning now can be made under the leadership of men of economic and scientific training. This would not have been possible a few years ago.

The present depression has set in motion many cross currents which further stress the need for a well-defined national land use policy. The "back to the land movement" for the unemployed, the propaganda to reduce the surplus by taking crop land out of use, widespread land tax delinquency, financial distress of irrigation and drainage districts, and the general agricultural maladjustments as related to land are outgrowths of the depression which indicate the need for land use planning. The depression also has produced other manifestations of the interest in planning or, to use perhaps a better word, rationalization. Since city planning has been a conspicuous success, a logical deduction by thoughtful citizens has led to the question, Why not specific national land use planning? The planning idea can be applied to land utilization without violence to our present economic system. It will probably meet more approval and less opposition when applied with judgment and good sense to agricultural, forest, grazing and lands affected by a public interest than to any other of the national resources.

The political stage is now set for action in the way of a new federal land use policy as is indicated by the fact that both of the great political parties have committed themselves to positive action in the land field. The Republican platform of 1932 said:

> "We favor a national policy of land utilization which looks to national needs, such as the administration has already begun to formulate. Such a policy must foster reorganization of taxing units in areas beset by tax delinquency, and divert lands that are sub-marginal for crop production to other uses. The national welfare plainly can be served by the acquisition

of sub-marginal lands for watershed protection, grazing, forestry, public parks, and game reserves. We favor such acquisitions."

On the Democratic side, Governor Roosevelt has been quite specific in stating that he looks "with favor to a definite policy to the planned use of land." He says:

"We already have more than enough tilled land to meet our needs for many years to come, since our population has ceased to expand so rapidly and agriculture is becoming from year to year more efficient. We have in the thirteen original states of the East and a few others, great areas of relatively poor land hardly worth cultivation which provide either actual or potential competition with better land. This lowers the quality of farm products, depresses the prices of better farm products, creates great added expense because of the faulty distribution of the population, and consumes public and private resources in attempting the development of means of living and communication that should not be needed.

"The total result of all this is waste and hardship. To provide the necessary guidance for the correction of this faulty distribution of farm and of farming energy, there is need for an economic soil survey, especially in the eastern states, to be carried on jointly by the nation and the states through the initiative of the Federal government. This soil survey should have a much broader scope than present surveys, and should be directed toward the problems of proper utilization of the land and future distribution of population along sound economic lines. It should lead to mapping and classification of land of all kinds to determine which lands are best suited for agricultural production, which lands are marginal and which lands are suited only to growing tree crops."

Governor Roosevelt has taken great personal interest in initiating and carrying out the New York State land use program. It marks a milestone on the road of land planning and it is reasonable to expect that he will manifest the same personal interest as President of the Nation in land policy matters as he did as Governor of the State of New York.

On the economic side many things have happened since 1929 to indicate that the public is looking for definite action at an early date in regard to land matters. The National Grange has repeatedly endorsed the principle of a definite land policy. The American Farm Bureau Federation at its last annual meeting adopted the following resolution:

"In harmony with our resolutions of 1931 we reiterate that there must be the declaration of a new long time national land policy. We must reverse our land policy, and replace the theory of expansion with that of conservation, setting about in a consistent way to retire submarginal lands from cultivation, developing a program of forest rehabilitation, setting aside ample areas for parks and public grounds and doing all the things

necessary to preserve for future generations as much of the values of the land as can be preserved."

The United States Chamber of Commerce, like the farm organizations, has through its referendum system committed its support to new constructive land policies. The President's Commission on the Public Domain, the National Land Utilization Conference held in Chicago in 1931, the setting up of the National Land Use Planning Committee, and the Senator Copeland Resolution asking the Forest Service to appraise the whole forest situation in the United States and report to the present Congress, are significant as expressions of national public interest. Some of the states are beginning to be active in the land policy field, notably New York with its land conservation commission and twenty million dollar bond issue for state acquisition of lands unsuitable for private ownership. Wisconsin has a state committee on land use, Michigan and Minnesota likewise have definite state land use machinery.

The purport of all this is that the foundation has been laid for national and, in some cases, state action. The political and economic group leaders have endorsed it. The time is now ripe for the first step. A new frontier of national land planning in working out mal-adjustments in present land use lies before us. It is perhaps a more difficult task than that of a hundred years ago of developing farms from the primeval forest and the virgin prairie, but even though more difficult, it is absolutely necessary for our future national welfare.

Content and Limitations of a National Land Use Program

First of all, a federal land use program must be truly national. It must look at the problem from the standpoint of the nation as a whole. It must recognize the interrelation of its parts. Federal agencies are the only agencies that can be expected to do this. Certainly it is difficult for individual states to see the whole problem. If those responsible for the national policy fail in this they fail completely. Also there must be some regard for the international implications. Looking ahead in a changing world, may we hope, not only for a national land policy, but for international understanding based upon the principle of world-wide comparative advantage in agriculture and industry, which of course will affect our land use?

Nor should the new national policy be considered as emergency action or as farm relief in the present distressed situation.

It must take the long time point of view. There is danger that it may, from a political standpoint, be over-sold. Its results must be measured in terms of the decades and not the immediate future.

Second, a national land use program must develop, clarify and coordinate existing policies and administrative activities of federal agencies dealing with land use. For example, for the past four years the Farm Board has been dealing with agricultural surpluses, while other branches of the government have continued policies looking toward expansion of farm production. The Forest Service is empowered to buy land, on the one hand, and the general land office continues to accept homestead and desert claim filings on the other. Federal coordination is also needed in research and in regional and state relations. The national land use planning committee no doubt is making progress in the matter of coordination of existing federal agencies, but there are limitations to its powers as matters now stand.

In formulating a new federal land use program, a decision must be made as to a division of labor and administration between the Federal Government and the states. This problem is as old as the Constitution. Precedent in organization, as well as administrative experience in such fields as agricultural education and research, vocational education, the federal highway system, and the draft during the World War, points the way to a separation of functions in such manner that coordination is maintained. In the preparation of this paper I have had the benefit of studying a number of letters from a group of men widely scattered over the country with regard to a national land use program.[2] One thought stood out clearly in these letters, namely, that the success of a national land program depends far more upon state and local agencies than upon federal agencies and that there should be clear division of the field and understanding as to responsibilities. Some of the letters cautioned against a centralized bureaucracy, others laid emphasis on state and local responsibility.

One of the most thought provoking letters was from Professor Lloyd R. Rice of Dartmouth College. Professor Rice spent some months as a temporary member of the Farm Board's economic

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[2] I acknowledge helpful suggestions contained in letters from the following: Dr. G. F. Wehrwein, University of Wisconsin; Mr. John M. Gaus, Executive Office, State Capitol, Madison, Wisconsin; Dr. Lloyd P. Rice, Dartmouth College; Professor G. W. Patterson and Professor H. M. Young, Virginia Polytechnic Institute; Professor J. D. Pope, Alabama Polytechnic Institute; Dean E. C. Johnson, Washington State College; Dean J. A. Hill, Wyoming College of Agriculture; Professor P. A. Herbert, Michigan State College; Dr. C. E. Ladd and Professor F. F. Hill, Cornell University; and Dr. John D. Black, Harvard University.

staff, in a study of the national land situation, its relation to a national agricultural policy, and what might be done about it. Professor Rice says:

"While I believe in and admire the excellent work that has been done by Federal Bureaus, jointly with several states, and am anxious to see it extended, I believe it must continue to be largely research in character, to enlist the active wholehearted support of local groups, and thus far it has not been carried into the state of 'planning' and 'getting action.' While it is desirable to utilize and expand the excellent facilities of the Federal Government which have pioneered in this work, it is even more important that the knowledge and interest of local groups should be capitalized. The greatest weakness in the present administrative set-up, in my judgment, is over-centralization. Investigations or classifications or planning which originate in Washington will lead to failure, so far as getting action is concerned and except as they are confined to major policies national in scope.

"Initiative should always lie in local bodies (including regional), but it needs to be stimulated and organized and possibly subsidized where local fiscal capacity is limited.

"Federal bureaus and their heads are too handicapped by their lack of knowledge of local conditions, traditions, and history to function satisfactorily except in active cooperation with similar bodies, moreover they are suspected of being too remote. My feeling is that our objectives will not be realized and the attempt to effect a more economic use of land will fail unless local groups are interested, organized by states or regions and incorporated in a vital way in the set-up before planning or classification is attempted."

Interest in some kind of action in relation to land planning is by no means lacking in the states. It has been estimated that at least one-third of the states would set up cooperative machinery if a national land policy board, such as I shall describe, were in existence.

While recognizing fully the need for the division of the field, the importance of the state unit and the cooperation of both state and federal agencies, I shall attempt to enumerate and discuss some of the things for which the Federal Government should be responsible.

First, the Federal Government should take the leadership in supervision, correlation, and in establishing the technique of a national land inventory and fact finding surveys to include soil, land cover, topography, water supply, and so on. To be of greatest value such surveys must fit together regardless of state lines. They involve the cooperation of a number of federal bureaus, including Soils and Chemistry, Forestry, Plant Industry, Agricultural Economics, and Geological Survey. The inventories or

fact finding surveys should be looked upon as a basis of action rather than elaborate scientific research. It would perhaps be best if the states looked for leadership in these matters to the Federal Government and the latter should be in a position to cooperate and to grant federal financial aid. Some states have little or no funds for such purposes. Since an adequate national land inventory is needed, and since the whole is made up of the parts, federal financial aid is fully justified. For the immediate future the federal agency should concentrate these kinds of efforts upon regions with most acute problems.

Second, the Federal Government should be responsible for, and assume leadership in fundamental land utilization research from the national and world point of view. It is particularly adapted to this while the states are not. I have reference to the important and excellent research work of the Division of Land Economics of the Bureau of Agricultural Economics and to such projects as national and international economic changes as they effect land use, and such phases as population in its relation to land, trends in production and consumption in relation to land use, tenancy and ownership, land settlement, need for new productive lands, rural-urban land development, etc. Such studies are needed as a basis for broad understanding of the present and for outlooks as to the future. They are necessary for the development and growth of sound national land policies. This is clearly an activity for the Federal Government.

Third, the Federal Government should cooperate with the states, regions, and local areas in the development, and perhaps in the financing, of land use programs, particularly in "problem areas."

This is a large order. It is much more than fact finding. While the initiative for state and regional land use programs should originate and largely be carried out by people within a state or states, nevertheless, if the federal agency has funds for program building and program execution, there will be great incentive for state and regional planning and action. Such projects should be organized on a regional or state basis with all interested agencies cooperating, particularly state land use boards or committees. The federal agency should be in a position to bring in technical advice and assistance from any bureau or division of the Federal Government in a coordinated and thoroughly cooperative manner. It should be the duty of the federal agency to keep these specific land use programs coordinated with the national policy. They should have funds for cooperation in such

programs both on a short time and long time basis. Federal financial aid should be given only for work and studies that are part of definite state or regional projects for readjustments and reorganization of land use. These programs will differ widely. In the cutover and mountainous regions, they will deal with reforestation, recreation use, game preserves, taxation, etc. Programs in the desert and public domain states will concern stock water development, vegetative cover and erosion, while other areas will be planned for watershed and stream flow purposes.

Certain principles of zoning might be applied in some land use area programs by the states with federal support and guidance. Under the new federal land use program, certain lands affected with a national interest should not be developed by the state, but should be taken over by the Federal Government as rapidly as possible, and a zoning system might be an aid in such effort. Areas might be acquired for watersheds, historic parks, scenery of natural interest, and game refuges. Cutover and forest lands of certain types and badly eroded lands which cause silt-clogged streams, and land now in the public domain, except private ranches, state forests and so on, have a definite public interest and might be included in such a program. While there are legal problems connected with zoning, such activities probably are constitutional under the police powers of the state. The federal agency should draft a model zoning law which would be uniform and yet adapted to conditions of different states and to administration by state land utilization commissions. Federal technical and financial assistance for state and regional land use planning and for the carrying out of such plans comes near to being the essence of the whole matter.

Fourth, there must be unified administration of federally owned lands and of lands to be acquired. Several different agencies now are administering the federally owned land. There should be some central coordinating head to this administration. If we are to develop a definite federal land program, then this coordination will indeed be very necessary.

Fifth, federal land acquisition. There is much interest in public acquisition of submarginal lands. Statements from certain quarters infer that this is either a sound road to farm relief and surplus production control or a means of increasing the agricultural income. Of course, the purchase of tillable crop lands on a scale sufficient to affect materially the volume of agricultural production would require a sum of money which would be almost staggering. It is indeed doubtful, under the present conditions of

the federal treasury, if "farm relief" will take such a course. A sudden program of this kind would take away the homes and basis of existence of countless farm families. While it is socially desirable to shift production gradually away from the submarginal acres, such action must be coupled with planned shifting of the population also.

The time is ripe for the beginning of a modest program of federal, or federal and state, land acquisition as a part of well-developed, long-time regional land programs. With so much tax delinquent land and with land values down almost to the vanishing point in some areas, it would appear most opportune at this time to initiate necessary preliminary work looking to the acquisition at least of land vested with some public interest. Sporadic and ill conceived federal land acquisition will do little good. The problem is complex. We shall await with much interest what the Forest Service will have to say on the subject in the Copeland report. However, a start should soon be made on such projects and in such areas as have developed well matured plans.

Sixth, Administration of the Public Domain. Regardless of the majority report of the President's Commission on the Public Domain, it is doubtful if it will be turned over to the states without some federal control. Sentiment in the West is shifting towards the Colton bill, which would provide for federal ownership and joint federal-state administration. This plan seems to be allaying the fears regarding bureaucratic Washington control—what some stockmen have called "an inflexible distant policy." There should be instituted at once regional land use programs for the various type regions of the public domain. The problem in the southwest desert is very different from that of the small scattered bad land tracts left over from homesteading in Montana and North Dakota. The public domain should be transferred to the United States Department of Agriculture and administrative machinery set up for its administration in cooperation with state land use boards. The earlier this is done the better.

Seventh, federal reclamation and drainage policies need to be coordinated in a national land use program. In the West there is a decided regional consciousness as far as reclamation is concerned. The western states have a fear that in any tampering with federal reclamation they will be the losers and consequently have an automatic defense mechanism which has resulted in what amounts to a western block in Congress. I expect this type of regional consciousness from other regions in the United States will be a practical problem which a truly national land use policy

will have to face. Therefore, this western regional irrigation complex must be studied and understood and not passed off as suspicious, narrow-minded regionalism. It can be treated and, in my judgment, cured by truly national land use planning.

For instance, a study by a national agency of the distribution of industrial and farm population in relation to natural resources might show the present distribution to be rather unstable, too dense in some places, too sparse in others. It might also show grounds for anticipating greater industrial development on the Pacific Coast and the western interior. Such growth would require an increase of those perishable commodities which are usually produced close at hand. This development would bring stability to the present irrigated area and might require some additions thereto. If some national planning of this sort were developed it would go a long way toward assuring the West of fair treatment and of convincing its people that they are an integral part of the whole nation.

Regional land use programs will show much need for adjustments in the present irrigation systems in the way of increased storage, watershed development, and some irrigation development especially to supply winter feed and give greater stability to grazing lands. If we are faced with a period of national isolation, which will retard the flow of farm population into industry and make for self-sufficient or part-time farming, it must be remembered that the West can play its part in this program only through its irrigated land. Probably regional land use studies will show the necessity for new irrigation to aid in shifting farmers from submarginal dry farms and stock ranches so as to give an opportunity for self-contained, non-commercial family life.

The time has come when there should be a distinction between the engineering phase and the agricultural phase of federal reclamation. A unified national policy would require the placing of the engineering branch of reclamation in a Bureau of Public Works in the Department of the Interior, and the agricultural phase, following the completion of projects, under the direction of the agency which is to administer the national land use program.

Under such an arrangement, the federal land use agency would be charged with the determination of agricultural and economic feasibility and the place in regional land programs of new reclamation or drainage contemplating the use of federal funds.

Many irrigation and drainage districts are now in financial distress. The Federal Government can render special service in such situations, which can not well come from any other source.

Eighth, the Federal Government should give national direction to land settlement and guidance to the so-called "back to the land" movement for the unemployed. This, of course, is not the solution of the problem of unemployment. Nevertheless, we may see a new national movement for the decentralization of industry and part-time farming, which is regarded by many as highly desirable whether unemployment is temporary or permanent. This important field has been little explored either from the side of industry or agriculture.

Ninth, a federal agency should be responsible for a nation-wide educational program on national land use policies. It could well sponsor and finance national extension land economists in the Federal Agricultural Extension Service, and in cooperation with the states aid in employment of state extension land use specialists, or extension land economists, to serve as a part of the State Extension Service, comparable to the present production and marketing specialists.

Limitations of a Federal Land Use Policy

Two important limitations should be placed upon a national land policy, or, perhaps more strictly speaking, upon its administrative set-up.

First, it should abstain from doing those things which the states can do best. While it should cooperate with them, it should leave as much responsibility for administration as possible with the states and regions.

Second, it should confine its activities largely to lands affected with a public interest and leave to other agencies the problem associated with the organization and adjustments of farming on the good lands. This falls into another category. It involves a different approach—that of farm organization and management and related production technique, which is a different phase of the broader national agricultural policy.

Suggestive Administrative Set-Up for a New Land Policy

Definitely embarking upon a new federal land use policy is a matter of no mean importance both to the present situation and to the future of agriculture. It is, therefore, desirable that the program be based upon a careful study and analysis considering

not only land utilization but governmental administration, state and federal relationships, finances, and the temper and will of the people.

Assuming that important legislation of this character could not receive serious consideration by Congress before the regular session of 1933-34, what might be done during this coming year to lay the foundations and pave the way for a new federal land policy bill? Three suggestions have been offered.

Suggestion No. 1. That the President or Secretary of Agriculture appoint a small committee of five members, selected primarily because of their expertness, understanding and interest, this committee to devote its entire time during the coming summer and autumn to the problem. It should analyze the background material, perhaps have public hearings in the states in which the land problem is the most acute, confer with state administrative and research agencies, test out the attitudes and interests of the people especially in the problem areas. It should work in harmony with the present national land use planning committee with its national legislative committee and technical sub-committees. Possibly part of its personnel should come from that committee. Its executive secretary might well be the present executive secretary of the land use planning committee. While it is realized that there is much prejudice at this time against boards and commissions, nevertheless, a small non-political committee could win general public approval. Its cost would be insignificant in comparison with the dangers of getting started on the wrong track, and without doubt it would eliminate much waste, error and inefficiency later on. This method probably would do more to establish friendly and cordial working relationships and understanding with the state governments than any other proposal. This approach would aid greatly in instituting sound federal-state relationships. It would also be the duty of this national land policy committee to recommend to Congress by December 1, 1933, a new national land policy bill, administrative set-up and some suggestions as to policy and procedure.

Suggestion No. 2. The Secretary of Agriculture might be requested by the farm organizations, the national land use legislative committee, and other groups to ask the present national land use planning committee, with its various technical sub-committees, to outline a definite policy, a plan of action and a new land policy bill. From the standpoint of logic probably the Department of Agriculture and the present national land use planning

committee could develop a bill and a plan which would be satisfactory. The objections to this procedure are that those who might be named on this committee are always pressed for time, there would be lack of funds for travel and the contact of regional, state and local agencies. However, this procedure would be quite simple and no doubt many would be ready and willing to see something develop along this line. Perhaps the Secretary of Agriculture should be encouraged to take the necessary action. The route would be direct, it would entail little expense, and probably could be worked out in a way that would carry public approval.

Suggestion No. 3. Congress might set up a joint congressional committee of inquiry into the status of land utilization in the United States with a mandate and an appropriation to hold congressional hearings, call in experts, and submit to the next regular session of Congress a report on the land use situation, together with a federal land utilization bill. The experience of such joint congressional inquiries is that the character of the work depends primarily upon the leadership of the committee and the personal interest of the chairman and his associates. In the past, such committees occasionally have rendered excellent service but the average performance is none too high. The advantage of such procedure is that it attracts a large amount of national attention and, providing there is general agreement, it sometimes makes legislative action easier.

A Proposed Federal Land Policy Bill

Along what general line might we expect a new land policy bill to be drawn? It would begin of course with the repeal of the existing homestead and other similar land laws. It must legalize national land use planning. Again, it should outline relationships—federal, state, local—and set forth the border zone between land planning and other phases of agricultural planning. It must decide whether it will be concerned primarily with lands which are not adapted under present economic conditions to tillage and family farming in the generally accepted sense of the term or with all lands regardless of use.

I shall outline briefly some of the things which might be incorporated in a new land policy bill or an act which might have as its object to promote a more efficient utilization of all of the lands of the United States but especially those not adapted to private ownership; to coordinate federal and state land policies;

to conserve the land resources of the nation; to lessen the uneconomic production of commodities, particularly on the low grade lands; to prevent wastage; to administer in the public interest those lands not adapted to private ownership; to aid and assist in land use planning, and to assist and cooperate with states in the formulation of land use plans and programs in distressed areas.

Four suggestions have been made relative to the administrative organization and set-up for a new federal land utilization policy.

Suggestion No. 1 is the plan outlined by President Hoover in his recent recommendations for the reorganization of government. According to this proposal, a definite administrative section would be created in the Department of Agriculture under an assistant secretary in charge of land utilization, such section to have included under it the present Forest Service, the Biological Survey, the Public Land Office (now in the Department of Interior) and possibly, if the wishes of the Grange are adhered to, the present Reclamation Service, or at least that portion of it which has to deal with administration after projects are constructed. It is my understanding that in such a proposal the engineering aspects of publicly financed reclamation would remain in a Division of Public Works of the Interior Department. Such set-up would probably have added to it a new division dealing with public land appraisal and public acquisition.

Suggestion No. 2. Another proposal would give legal status to the present national land use planning committee which came about as a specific recommendation from the National Land Utilization Conference held in the fall of 1931. The national land use planning committee has the approval of the Secretary of Agriculture and is made up of representatives of the different bureaus of the government dealing directly with problems relating to land. The bureaus related to land of the Department of Agriculture, such as the Forest Service, Agricultural Economics, Agricultural Engineering, Chemistry and Soils, are represented. Included also are representatives of the Department of the Interior who have to do with the public land office and reclamation. Other units and agencies represented are the Geological Survey, National Parks Service, Land Grant Colleges, etc. Under such an arrangement, the national land use planning committee would become a sort of general staff for coordination and unification of effort. Under this proposal it would be a com-

mittee for policy formation, perhaps under the leadership of an assistant secretary of agriculture in charge of land utilization. There is merit to this plan in that it tends to harmonize and lead to coordinated constructive effort of existing bureaus and yet not to disrupt bureaus or organizations in which there is of necessity considerable over-lapping.

While this plan of organization is adapted to coordinating the work of various bureaus, it is doubtful if it can give action and punch in putting over its program such as would be the case with a small, specially delegated body. Furthermore, it may be that it will have more difficulty in getting congressional recognition and appropriations than a special body. It has the difficulty of remaining an inter-bureau committee rather than a truly national land policy forming and executing body.

Suggestion No. 3. An independent federal land policy board of three or five members set up outside of any present governmental department, to determine policies, use survey material of workers in the Agricultural and Interior Departments, and be given funds for land use surveys, land purchase, and administration. It would cooperate with state land commissions in carrying out joint land use projects. Its work would be done by transferring its funds to the proper department or state agencies. It would have only a very small staff of its own. There is danger that such type of board would be political in its make-up and not in harmony with the cooperating federal and state agencies.

Suggestion No. 4. A national land utilization board of three or five in the United States Department of Agriculture but not in any bureau. Perhaps under the Hoover plan, the assistant secretary in charge of land utilization might be its chairman. If the board consisted of three, one might represent agriculture and crop land, another forestry and related use, a third grazing and reclamation. This board should have its own appropriations but only a small staff, its work being largely done by existing bureaus and state agencies. The board would have general charge of governmental land acquisition aside from that which is now carried by the Forest Service. It would not interfere with present bureau organizations. We could assume that under such an arrangement the public domain and administration of the agricultural side of reclamation would be transferred from the Department of Interior to the Department of Agriculture.

This appears to be the best and most logical proposal. The

present national land use planning committee could well be retained as an advisory and coordinating agency to this departmental board. The present Federal Horticultural Board is an example of this type of organization.

Administrative Duties

The duties of the new administrative unit, no matter how constituted, might be enumerated as follows:

a. To develop a national land use program adapted to the present and future needs of the nation and to keep the same adjusted to changing economic conditions, and to coordinate and administer the federal aspects of such program in cooperation with the states and other agencies.

b. To render assistance of the Federal Government to states and regions in the development of programs and plans of economical land utilization for large areas in the United States which are reverting to local and state governments for delinquent taxes or are in distress from any other causes.

c. To take the necessary steps in relation to land use to discourage uneconomic production of surplus and to assist in balancing production to reasonable market demand.

d. To plan and provide the machinery for the acquisition of submarginal land either by the Federal Government or by joint arrangement of the Federal Government and respective states.

e. To provide plans for reorganization and financial relief of distressed irrigation, drainage and other land projects in the United States.

f. To cooperate with state and local agencies in research, land classification and planning, land conservation, and more economical land use.

g. To serve as an agency for the coordination of the various kinds of work of the government, state, and local agencies concerned with land and land use policies.

h. It should be the primary duty of the federal land utilization board in cooperation with state and local agencies to develop programs as early as possible for those areas where conditions are most acute and where there is manifestly a state and local interest in dealing with the problem.

There should be worked out with great care in the bill a set of relationships between the Federal and state governments in regard to these matters. These relationships are complex and perhaps there is no part of this program which requires as care-

ful, constructive and inventive thinking as this aspect. It is suggested, however, that the program provide that the board will cooperate with those states, which, through legislative enactment, establish state land utilization boards designed to function in a state way as the national board would function in a federal way. Possibly such action on the part of the state might be a necessary requisite for any activities within the state on the part of the federal board. Since it is assumed that most of the finances for acquisition of lands will come from the Federal Government, it is likely also to assume that a relationship will arise here quite similar to that now exemplified in the national highway program and in agricultural education.

Public Acquisition of Lands

An examination of the public discussion of land policy matters at the present time indicates a steadily growing public sentiment in favor of public acquisition of lands in areas which are unsuited to private ownership. The new land policy bill should, therefore, provide that the federal land utilization agency, in cooperation with designated state agencies, develop plans for the public acquisition and administration of such lands. In the beginning it has been suggested that only such lands should be selected which have to do with one or more of the following categories:

(a) To round out and consolidate existing public holdings of land for forests, parks, or other public purposes.

(b) To withdraw from private ownership tracts occupied by a sparse and scattered population, in order to economize state and local expenditures for public services.

(c) To provide for the permanent maintenance of local forests for supplying fuel, fence posts, and other materials upon which farmers, other residents of the community, and local industries depend, and to establish local refuges for game, and local centers of recreation.

(d) To remove from private ownership lands that are periodically brought into temporary cultivation under the stimulus of unusually high prices or favorable years, but are incapable of permanently profitable utilization, in order to remove the unfair competition of such lands with the established farming industry and to prevent the serious wastes and hardships incurred by their occupants after the temporarily favorable conditions have passed.

(e) To remove from private ownership lands that cannot be utilized profitably by private individuals or concerns without wastage of the soil through erosion or other causes.

(f) To devote areas not adapted to private utilization—or which cannot be profitably utilized without serious detriment of public interest—

but which are adapted to public uses for the purpose of insuring a permanent supply of timber, watershed protection, and provision for adequate recreational areas and game preserves, local, state, and national.

For other lands found best adapted for public ownership the federal and state land utilization boards jointly should formulate programs for the establishment of compact units of public ownership and administration.

Appropriations should be made for public acquisition. Since the acquisition program is somewhat experimental, it had best begin in a small way and develop as experience warrants. However, it has the present Federal Forest Land Purchase Act, which should not be interfered with, as a background. Quite likely Congress will prefer to appropriate for such purposes on the basis of definite projects. In order that the program may be started, however, it would be perfectly logical that a sum, say twenty million dollars, be made available for the first year for the purchase of lands adapted to public acquisition by the Federal Land Utilization Board.

The problem of distressed irrigation and drainage districts is quite acute. It is being recognized that new federal irrigation should be based upon feasibility studies as to needs and economic soundness. The Federal Land Use Board should be in a position to study carefully all proposals for new reclamation and drainage districts together with adjustments and modifications in existing drainage districts which will be or have been financed by the Federal Government. Likewise, there are many irrigation, drainage, and levee districts which are now in financial distress and are unable to meet their legal obligations. The Federal Land Use Board should have the authority, when called on by interested parties and proper state agencies, to make careful studies of particular situations and recommend plans for reorganization and rehabilitation. The technical advice supplied in such cases should come from such institutions as the Bureau of Agricultural Engineering, Bureau of Agricultural Economics, the Soil Survey, and the State Colleges and Experiment Stations.

The Board need not interfere with the administrative procedure of the Bureau of Forestry and the handling and management of forest lands. Reforestation should be left entirely within the Forest Service and the control and administration of the public domain should not be directly under the Board, but rather under some governmental agency established for its administration.

In the matter of financing the Board itself, no great amount of funds will be necessary. Salaries and expenses need not exceed $50,000 a year. However, it is logical to assume that the proposal will call for a substantial increase in research and investigational work by existing divisions and bureaus of the Department of Agriculture, state experiment stations and perhaps other research agencies. Congress should make available funds to be allocated by the Board to the federal and state agencies, carrying on research on particular problems necessary to the Board's work. Before recommending a land use program in connection with a distressed area, surveys and research activities would of necessity have to be conducted. The Board should be in a position to finance these activities, and if a public acquisition program is to be put into effect, it should be on the basis of the facts derived from its research. Various estimates have been made as to the cost of such investigation, which should be carried on immediately. Likely this would vary from time to time, but for the years just ahead it would probably not be less than five hundred thousand nor more than a million dollars.

LAND USE PLANNING BY THE STATES[1]

RAPHAEL ZON
LAKE STATES FOREST EXPERIMENT STATION

The thing which has given impetus to land use planning in many states in the last few years is tax delinquency. Tax delinquency is turning back millions of acres of land into public ownership, and naturally the public agencies are beginning to wonder what they are going to do with it all.

The problem of abandoned and reverted land is not the only one created by tax delinquency. The failure to pay taxes has, in some localities, caused a whole sequence of governmental difficulties. Debts have become unbearably oppressive, taxes have risen to unreasonable heights, and many fundamental services, particularly schools and roads, are being maintained only with the help of large subsidies from the States. As one of the men said at a recent conference in New Orleans: "There are scores of counties containing nothing but stumps, debts, and court houses."

It is true that the current depression has aggravated these difficulties and brought the whole problem to a head. But the land reversion problem is one that has been in the making for a considerable period of time, and in some ways it is very fortunate that something has occurred to precipitate action and force a solution at this time.

The Lake States were pioneers in land use planning. Even before the War, Van Hise and Ely were urging state planning to bring about better use of the soil and other natural resources. In the reconstruction following the War, Michigan made an ambitious start in cataloging its resources preparatory to scientific land classification. Its Land Economic Survey was probably the most comprehensive physical inventory ever attempted on such a large scale. Again, since the world depression has made it evident that some radical adjustments must be made in some of our rural sections, the Lake States have been among the first to attempt to find an answer in a more planwise use of their natural resources.

Early in the summer of 1931, Governor Philip La Follette of Wisconsin appointed a Committee on Land Use and Forestry, requesting that it "work out a program of land utilization which, with the cooperation of the state, local and federal agencies,

[1] This paper was read at the Twenty-third Annual Meeting of the American Farm Economic Association, Cincinnati, Ohio, December 28, 1932.

may restore economic self-sufficiency to the cut-over regions of the State." One of the principal recommendations of this Committee was that there should be a Permanent Committee on Land Use in the State. The Governor immediately responded by appointing such a Committee from representatives of the various agencies most directly concerned in land use matters.

If land use planning goes no further than to coordinate the land policies of the various state departments, it will have been extremely worth while. Hitherto, we have had one state agency trying to protect the forests while another was selling state timber for destructive exploitation; one agency trying to curtail agricultural production while another was aiding land colonization.

When we try to control land utilization it is all the more necessary that state efforts should be coordinated. For instance, if it is decided that the best interests of the state will be served by concentrating agricultural development in certain favorable sections, the whole state program from land disposal to state aids, and even extension work, should be shaped to that end. There is considerable evidence to the effect that many of the state aids to local communities, instead of really helping, serve rather to perpetuate an unsound economic situation. Some school aids encourage scattered settlement, road aids stimulate opening up of new territory, and other subsidies condone and make possible a form of local government unsuited to present day conditions.

Ill-considered and undirected state aids are in the long run a detriment to the communities and an unnecessary burden upon the states. On the other hand, properly directed state aids are justifiable, both from a social standpoint and as a means of returning the cut-over regions to a basis of self-sufficiency. State aids may be a most effective means of carrying out the plans adopted for better land utilization.

How does a State Land Use Committee function? In Wisconsin a great many of the state, as well as some of the federal agencies, have been carrying on studies in land use under the general head of "surveys." There have been the "land economic" surveys in the State Department of Agriculture and Markets. The agricultural college has had its various economic and farm management studies. The Conservation Department has been surveying the state forest lands, and the United States Forest Service has just started a nation-wide forest survey. All of the state "surveys" have been largely uncoordinated and more

or less overlapping. One of the first jobs that the Wisconsin committee attempted was to merge these various studies into a comprehensive state "economic survey" which would be adequate and yet not too cumbersome or costly. Now a program has been adopted which will complete the entire northern part of the State in four bienniums at a cost of about $200,000.

Another practical result of the work in Wisconsin has been the complete reorganization of the field work of the Conservation Department. The work which was formerly handled by nearly a dozen fire rangers, supervised from Madison, has been decentralized and placed under five conservation wardens who, in addition to the fire work, have charge of parks, forest planting, improvement work, in fact everything connected with the forest program. The idea is that these conservation wardens, who must be especially competent men, to a large extent will shape the land use developments in their districts. They will be the field representitives of the planning committee.

In Minnesota the first steps in state planning have been quite similar to those in Wisconsin. Last June, Governor Olson declared his intention of appointing a land use planning committee, and shortly thereafter named the committee with President Coffman of the University of Minnesota as Chairman.

As in Wisconsin, the main problem put to the committee was that of tax delinquent lands. Under a law passed in 1927 all land which has been delinquent for five years becomes the property of the State, to be held in trust for all of the taxing districts interested in the unpaid taxes. The first of these lands (over four million acres) are about to revert to the state in May, 1933. Other large acreages are on the way and, unless something is done, the state will become the owner of over half the land in northern Minnesota before the end of the decade.

The land use committee held a number of hearings in northern Minnesota during the summer and is still holding regular meetings in an attempt to shape up a reasonable program upon which the state legislature can act. Some very fundamental governmental questions are involved, such as to what extent the state should reimburse local taxing districts for lands placed in state forests; what, if anything, the state should pay the counties in lieu of taxes on state-owned land; whether the state or the counties should be empowered to classify the reverted land and offer it for sale to prospective settlers; etc. Fortunately, there is an almost unlimited amount of special talent at the disposal of the committee. Numerous special reports are being prepared by

members of the University. Our Station has been able to make some contributions. We can be assured that some very well considered and impartial recommendations will be submitted to the Governor.

Michigan has not yet formally appointed any planning committee. Yet, rapid progress in land use planning is being made. For instance, a cooperative study is now under way covering all of the possible factors involved in the land use problem in the Upper Peninsula. This study originated as a voluntary measure of cooperation between the State Department of Conservation, the University of Michigan, the Michigan State College, and the United States Forest Service. It is designed primarily to take the raw material provided by the Michigan Land Economic Survey and build it into a state land use program. Foresters, soil men, sociologists, economists, farm management experts, political scientists, and geographers from these institutions have been brought together to work in a given locality and to follow a common general plan.

The main idea in this Michigan project is to bring together as many as possible of the men who have something to contribute and to let them learn to work together. As it goes along, those who have only a passing interest will drop out and the machine will adjust itself to the needs of the occasion. It will be time enough after these adjustments have been made and we find that we can work together and accomplish some good, to crystallize the organization into a formal committee.

You may judge from my discussion of the Lake States programs that I am rather in favor of some sort of permanent land use committee, made up of the heads of the principal agencies dealing with land use and state aid, the purpose being to coordinate and unify the state policies.

The question has been raised as to whether these committees will not short-circuit the regular route of administrative responsibility. As I see it, the land use committee does not need to have any administrative authority or, for that matter, any legal status whatever, providing the Governor has enough interest in the program to make the department heads get together and cooperate. In practice, the committee will merely give the regular departments an opportunity to get together and reach a conclusion as to what the state policy should be and then to proceed individually with full knowledge of what the other fellows are trying to do.

An incidental advantage of the permanent land use committee

is that these committees enjoy more prestige and more confidence than do individual state departments. For instance, local people may mistrust the Conservation Departments when they advocate large reforestation projects in some sections, feeling that these departments are prejudiced in favor of game and forests. But when the entire committee favors a project, it is likely to be considered with respect.

The United States Forest Service has been represented on the preliminary land use committees in all of the Lake States and is given a place on the Wisconsin Permanent Land Use Committee. This is rational because the federal government is an important factor in the whole land utilization problem in these states. A large part of the land which must be dealt with is in the cut-over sections of the states. Most of the lands are forest lands and some form of forestry is about the only use which is advocated for them. The National Forests are already reclaiming several million acres of these cut-over lands, and it is not unlikely that the federal government will be called upon to make even more substantial contributions to the rehabilitation of the region.

Strangely, the foresters in these land use discussions have been the very ones to put the brakes on too much reforestation. The agricultural specialists, imbued with the idea that submarginal farm land must be taken out of production, are inclined to throw all of the unwanted land into forests. It has fallen to foresters to point out that there is such a thing as submarginal forest land and to guard against setting up state programs which are out of line with the needs and the financial resources of the states.

Incidentally, federal foresters have been able to make one other important contribution in these state committees. Being organized on a regional basis, both for administration and research, they are in close enough contact with local conditions to have a very realistic understanding of the local problems and yet, with their inter-state connections, to view the phases of these problems in a somewhat broader way, thus carrying new ideas from one state to another.

How this form of land use planning will work in other states and other regions is difficult to judge. I know that states in other sections of the country are seeking concrete means of coping with their problems. California's Natural Resource Committee, the Permanent Committee of Mississippi's Land Use Conference, and several New York committees, to mention only a few, are

active in this field. Heretofore, however, most states have accepted the continued independent existence of the various state agencies involved in land utilization, and I doubt if any have gone as far as the Lake States in coordinating and bringing them into line on a unified program.

Certainly land use planning is needed in all sections of the country. Large areas of nearly depopulated lands are becoming a common phenomenon in a growing number of localities. In the South conditions are even worse than in the Lake States. Farms by the thousands are being surrendered to the tax collectors, who thus find themselves with a vast non-productive and generally unsalable domain. The few who might be induced to speculate in this land are deterred by fear of uncertain titles if for no other reasons. Arkansas furnishes an apt illustration of how inadequate laws simply add fuel to the spread of tax delinquency. In that state the law permits the resident landowner, after surrendering his land to the tax collector for non-payment of taxes, to continue to live on it and at the end of three years to repurchase it for $1.25 an acre. This really amounts to a gift—a sort of Homestead Grant—and, as an excellent bargain, is being taken advantage of by hundreds of settlers to the point of disrupting the entire fiscal structure of the government through a vicious acceleration of deliberate tax delinquency fostered by the very law supposed to prevent it.

Even in the West where farm population is still on the increase it is important that the states guide their settlement in a more planwise fashion, if they are going to avoid the mistakes which have been made in the East. Even now many counties in the western states have been reduced to virtual bankruptcy by the removal of the timber and are in just as serious straits as any of the eastern counties. In fact, the condition is even more serious in some of the sparsely settled states which have little industrial wealth to help absorb the shock.

In all probability the land problem throughout the country has the same elements everywhere. There is a widespread tax delinquency problem. There is uniform need for reorganizing local governments; there is need for guiding agricultural development along sound lines; and there is need for a rational forest program.

There are probably the same obstacles to contend with in nearly all states. There are the departmental jealousies. There is some hostility upon the part of certain land selling agencies, timber-

land owners, local boosters and speculators. There is pressure from well-meaning but often ill-advised clubs and groups such as wild life and sportsmen's organizations.

It has been our experience in the Lake States that the best way of reconciling the conflicting interests and overcoming minor jealousies is by the creation of a representative state committee before which each interested party will have ample opportunity to present his views and advocate his plans.

STATE LAND USE COMMISSIONS AND PROGRAMS OF LAND USE[1]

C. E. LADD
NEW YORK STATE COLLEGE OF AGRICULTURE

I shall say very little about state land use commissions. In general, such a commission seems inadvisable to me, or at most, advisable only as a very temporary unpaid commission. Land use programs should be carried through by existing agencies; the research and classification work by the Land Grant College, the formulation of state land policies by a temporary conference group representing the groups most interested and best informed, the development of the varying classes of land by the various agencies that regularly deal with those problems such as the state conservation and forestry department, the agricultural extension service, and others. Of course, conditions vary in the different states and the use of a state commission may be the only way of accomplishing the purpose in some cases.

There are two essentials in a land use program: first, classify the land; second, formulate and execute a program for putting each class of land to its proper use.

The land classification survey is a relatively simple matter. We should always recognize it as a means to an end not an end in itself. It should be simple, accurate, rapid and cheap. There is sometimes a tendency to over-elaborate this survey, to make it too comprehensive, too detailed and much too slow. This is one of the first dangers in the present land-use movement. In most of the states there are available many kinds of data upon which to base this land classification work such as soil surveys, meteorological data, farm management surveys, geological studies and others. The land classification work must be carried on by persons who know farms and who are trained in farm management.

In formulating programs for each class of land, we have placed the emphasis in an entirely wrong place if one is to judge by published reports. The emphasis seems to be placed entirely upon the development of programs for the sub-marginal lands. This is of course important but it is much more important to formulate programs for the development of the good farm land.

In many states it will not be financially possible to reforest or otherwise develop the sub-marginal land. But the boundaries of

[1] This paper was read at the Twenty-third Annual Meeting of the American Farm Economic Association, Cincinnati, Ohio, December 28, 1932.

these areas can be defined and steps taken to prevent the great individual and social losses that come from attempts to farm such land. Where reforestation is feasible and financially possible, that work should be pushed as rapidly as possible. In many western states the most important problems are the proper protection of water sheds and prevention of over-grazing. The program for these lands should include such transfers of ownership and regulation of use as will give the needed protection.

The most important part of the land use program is the development of the good farm areas. Here we have the largest fund of factual material, the results of research work in every field of agriculture, vast accumulations of economic and statistical material. We have not gone as far as we should in coordinating this material and building well balanced programs. This is a job for the agricultural economist. The extension economist may well be the most important worker and take the lead but he will need the support and help of research and extension workers from every subject-matter field.

In formulating programs of land use for the real farm lands one must study trends of agricultural production, world-wide, national, state and local. The factors which determine types of farming and the probable future trend of agriculture in the particular area must be considered. Market conditions, market demands and trends, changes in farm practices, and competing areas need to be studied. All of these factors and many others will affect the program. The development of public conveniences must be planned such as good roads, electricity, schools and health facilities. Unless these can be made reasonably satisfactory to most farmers it is doubtful whether a permanent agricultural community can be maintained.

Interest in programs of land use is sweeping over the country with great rapidity. I am sure that all of us who are close to this movement have been surprised at the great amount of interest developing during this period of depression. Much will be accomplished if the work is well guided. The guidance will be largely in the hands of the land grant institutions and the national department of agriculture, and particularly the agricultural economists. If the programs are to be well conducted we must have much greater coordination of effort among the states than we have ever had in the past. This is essentially a national movement not a local job. It must be handled in a national way.

Discussion by George S. Wehrwein

University of Wisconsin

I have to disagree with Dr. Ladd's statement that the emphasis in land utilization should be placed upon the good land rather than on the submarginal land. At least the problem in the Lake States forces us to give our immediate attention to the idle and non-productive cut-over lands. This is the land which is becoming tax delinquent, forcing increasing burdens upon the scattered communities of farmers, the cities and villages, the resorts and remaining timber. Three years of delinquency permit the counties to take title to the land, thus creating the "new public domain" whose utilization must be directed by public action. Many of the local units of government and many of the functions of government would cease in this region if it were not for the state aids. For this reason the entire state is interested in a county where the state spends $4.00 for every dollar received in taxes, as Dr. Zon has pointed out. The validity of state aids is well established. Populous and prosperous communities should pay taxes to support institutions and functions in the less favored areas; but they have a right to expect a wise expenditure of their tax money. They should ask whether the money could not be more profitably spent if settlement were more compact, if land use were adapted to economic and physical conditions, and useless roads and schools were wiped out. Perhaps the whole structure and form of local government should be revamped to suit the marginal areas.

We have hopes that something of this can be accomplished through the Wisconsin county zoning law. Just before coming here, we had a meeting of a committee at the Wisconsin College of Agriculture to draw up a zoning ordinance for Oneida County. There are several areas in which the county has established county forests. The county, of course, can control settlement on the land it owns, but this ordinance will prohibit the use of the privately owned land within the zoned area for anything except forest industries and summer recreation. The surveys and studies previously made have proved helpful in blocking out the zones. Forest zones will also be thrown around an area in which a state forest is being established, and around a federal forest. In both of these cases there is privately owned land whose use will be regulated by the ordinance.

Finally, I wish to supplement a statement of Dr. Zon. He told you how the various agencies of Wisconsin, which formerly conducted independent surveys, had been brought together to cooperate under the direction of a "land use committee" appointed by Governor LaFollette. However, we have had a change in administration, and the united budget had to be submitted to the new governor. With the general readjustment now going on, we will have to await the approval of the new legislature before we can be sure that this plan will be carried out.

Discussion by A. B. Lewis

Cornell University

In view of the objections that have been raised to Dr. Ladd's statement that land use planning is more important in connection with agri-

cultural than with non-agricultural land, it seems desirable to outline in more detail the procedure followed in the land classification studies in New York.

The land is first classified in five general classes, the first two of which are described as better adapted to forestry than to farming. The other three are adapted to agricultural uses of different degrees of intensity. The designation of certain areas as adapted to forestry implies that wherever land in such areas can be bought for reforestation prices it is suitable for purchase and reforestation by the state. As has been previously mentioned, New York has started a $20,000,000 program of reforestation of land suited to that use.

The fact that an area is classified as better suited to forestry than to farming indicates that this area has little need for hard-surfaced roads, rural electric distribution lines and other modern facilities. Moreover, such an area has not the means to pay for these services.

On the other hand, the economic development of the three land classes adapted to agricultural uses will be furthered by the construction of hard-surfaced, farm-to-market roads, and by the building of rural electric distribution lines. Agricultural areas can make economical use of these and other services, such as fire insurance, credit, and schools; and are able to pay for them.

As time goes on it seems clear that considerable public money will be spent in the building of hard-surfaced, farm-to-market roads. It would pay to spend little of this money in areas better adapted to forestry than to farming. Moreover, even in agricultural areas, not all of the roads are of sufficient use to be hard-surfaced. It is also probable that a much more complete electrification of the rural districts than now exists will come about in the future. From the standpoint of the rural consumers who will pay for this service it is important that lines be built only where the consumption of electricity will justify the expense of supplying it.

For these reasons, the land classification surveys in New York include road plans which classify the roads as to the order in which it would be desirable to hard-surface them. These surveys also include a similar plan of rural electric distribution lines and suggested extensions.

It is evident that the carrying out of such plans for the economic development of areas suited to farming will ultimately involve the expenditure of much greater sums of money and will directly affect the welfare of many more people, than will the accomplishment of plans for the reforestation of lands better adapted to forestry than to farming.

AN EVALUATION OF THE PRESENT ECONOMIC POSITION OF AGRICULTURE BY REGIONS AND IN GENERAL

I. Prices of Farm Products[1]

JOSEPH S. DAVIS
FOOD RESEARCH INSTITUTE, STANFORD UNIVERSITY

This is an enormous subject, of great complexity, most difficult to take hold of and treat briefly. I will not attempt the impossible task of covering it, even for the United States alone; also, I will try not to strain at a gnat and swallow a camel. I wish mainly to suggest certain viewpoints and to touch upon some pitfalls of assumption or interpretation against which we should be on guard.

You are familiar with the vast collection of statistics of prices of farm products, assiduously compiled, worked over into indexes, and published by trade journals, the Bureau of Labor Statistics, the Bureau of Agricultural Economics, and State Agricultural Colleges. I will not take your time to list or assess these valuable materials, or to point out and bewail their limitations. Defects and deficiencies certainly exist; but here as elsewhere we have more and better material than is wisely used. The immediate question is: What do farm-products prices, in actual or manipulated forms, signify in appraising the present state of agriculture? I suspect that additions and amendments to present data, however desirable and appropriate they may be, would not significantly improve these data for the purpose here in hand.

If one seeks to inquire why the farmer is in sore straits today, one must go behind the price data to inquire why so extreme a fall has occurred, and also behind the statistics of operating costs, debt, and taxes, to ask why these burdens are so heavy. But this important subject is not, I take it, the topic before us.

Prices of farm products are at best only crude indicators of the economic position of farmers. Individual farmers, groups of farmers, and agricultural sections may prosper with "low" prices of farm products or be badly off if prices of farm products are "high." Actual prices of specific farm products, relative prices of specific products, comparisons of these with a general index of commodity prices, and indexes of prices of farm products (at the farm or in wholesale markets) as related to the gen-

[1] This paper was read at a joint meeting of the American Farm Economic Association and the American Statistical Association at Cincinnati, Ohio, December 29, 1932.

eral index of others, have been too commonly relied upon in lay evaluations of the position of agriculture. Competent statisticians in this field, while not often guilty of this, have not prevented misuse of their work by others and have sometimes unwittingly promoted it.

In evaluating the position of agriculture, prices of farm products are of major importance through their contribution to the appraisal of directly significant magnitudes which they, or price indexes, imperfectly suggest. They constitute important factors, but by no means the only ones, in determining the farmer's gross and cash income. Consequently they affect his net income, his ability to meet taxes and interest charges, his purchasing power for farm equipment and supplies and for consumption goods, durable and otherwise. Through these in turn such prices affect the sale value of his farm and home. It is not to prices but to such other things that one must look for a reliable evaluation of the position of farmers, individually, regionally, and in the nation as a whole. Prices and indexes of prices are incomparably less useful in evaluating the position of agriculture than national, regional, and group measures of gross, cash, and net income derived with the aid of prices of specific commodities, quantities produced and sold, costs of production and fixed charges. I therefore gladly leave to those who follow me on this program the real burden of appraising the position of agriculture.

Lest I disappoint your expectations, I will cite a few statistics that reflect the drastic decline of prices of farm products in the past three years, to points near or below the historic lows of the 1890's, when burdens of debt and taxes were much smaller than now and the general level of operating costs was considerably lower.

The U. S. Department of Agriculture's monthly index of farm prices, available from 1910 on a 5-year pre-war base (see Table 1), stood at 135 in June 1929 and reached a low point of 52 in June 1932. Of the group indexes, cotton and cottonseed showed the most striking declines, from 146 to 37, and meat animals followed, with declines from 163 to 57. The dairy products index fell from 135 to 62, the poultry products index from 140 to 59, and the grains index from 111 to 44. Advances in July-August were practically wiped out in October-December. The grains index has declined most strikingly, to 34 on November 15 and to 33 on December 15. For individual farm products, with rare exceptions, the months of June-December 1932 will show the lowest

monthly farm prices since these data were first collected in 1908; and except where seasonal influences figure significantly (as with poultry products), the December figures will be at or close to record lows. The recent decline in prices of farm products, spread over three years, was relatively greater than in 1920-21 though less precipitous.

Farm prices in December 1932 show new record lows for the grains and prices close to record lows established last year or in the middle 'nineties for many of the other crops for which comparable data are available. Farm prices of livestock and

TABLE 1.—SELECTED PRICE INDEX FIGURES ON A PRE-WAR BASE, 1925, 1929, 1932*

Index	Base	June 1925[a]	June 1929	June 1932[b]	November 1932
All commodities at wholesale	1910–14	150.4	139.0	93.3	93.3
Farm products at wholesale	"	153.3	144.9	64.1	65.5
Retail prices paid by farmers	Aug. 1909–July 1914	160	155	110	106
Farm prices received by farmers: Total index	"	148	135	52	54
Grains	"	164	111	44	34
Fruits and vegetables	"	184	120	82	57
Meat animals	"	139	163	57	57
Dairy products	"	130	135	62	68
Poultry products	"	135	140	59	115
Cotton and cottonseed	"	183	146	37	47

* U. S. Department of Agriculture figures, for wholesale prices based on B.L.S. indexes.
[a] Highest June since 1920 for the aggregate indexes.
[b] Low for 1932 through November, except for some groups of the farm price index.

livestock products, however, have in general not fallen as low as in the 1890's (see Table 2).

While farm prices of many farm products have fallen below the historic low points of the 1890's, the index of wholesale prices of farm products, on a 1910-14 base, has not fallen as low as in June 1896. The all-commodities wholesale index has, however, fallen much less than the farm products wholesale index; hence the percentage of the farm-products index to the all-commodities index, which was 104 in June 1929,[2] was 69 in June 1932, considerably lower than at its low point in June 1896.[3] The Department of Agriculture's index of retail prices paid by farmers has naturally dropped less than the all-commodities wholesale index,

[2] On the basis of these two indexes it is incorrect to say that "farm products have been below their pre-war parity ever since [1920-21]" (National City Bank Letter, December, 1932). See also figure 1.

[3] The following figures are pertinent:

B.L.S. Index, 1910-14 base	*June 1929*	*June 1932*	*June 1896*	*November 1932*
(a) Farm products	144.9	64.1 (low)	51.3 (low)	65.5
(b) All commodities	139.0	93.3	66.4[a]	93.3
Percentage (a) to (b)	104	69	77	70

[a] This index was 65.8 in July-August, 1896, and at its lowest, 65.7, in June, 1897.

only from 155 in June 1929 to 110 in June 1932 and 106 in November 1932.

With farm prices of farm products at or near record lows, after terrific declines in the past three years, it is not surprising that the farmer's income is drastically reduced and that acute agricultural distress is widespread.

The percentage decline in prices of farm products has naturally been greater in the "farm prices" than in wholesale (do-

TABLE 2.—DECEMBER 1 FARM PRICES IN THE UNITED STATES, 1929–32, COMPARED WITH LOWEST IN THE 1890's*

Product	Unit	1929	1930	1931	1932[d]	Lowest in 1890–99	
Crop							
Wheat	Bu.	$1.035	$0.600	$0.443	$0.316	$0.489	(1894)
Corn	"	.774	.655	.360	.188	.213	(1896)
Oats	"	.426	.315	.231	.[illegible]	.187	(1896)
Barley	"	.544	.389	.352	.[illegible]3	.323	(1896)
Rye	"	.849	.384	.387	.[illegible]11	.409	(1896)
Buckwheat	"	.969	.835	.424	.383	.392	(1896)
Potatoes	"	1.288[a]	.890[a]	.429[a]	.368	.266	(1895)
Sweet potatoes	"	.939	.900	.574	.389		
Flaxseed	"	2.843	1.398	1.202	.828		
Rice (rough)	"	1.002	.782	.609			
Apples	"	1.31	.93	.58	.62		
Hay (tame)	Ton	12.19	12.62	9.06	6.14	6.00	(1898)
Cotton	Lb.	.164	.095	.057	.054	.046	(1894)
Cottonseed	Ton	30.33	21.61	10.45	8.87		
Cloverseed (sweet)	Bu.	3.57	3.49	2.67			
Timothy seed	"	2.22	2.82	1.64	.95		
Alfalfa seed	"	11.17	9.88	6.51	5.42		
Cow peas	"	2.31	2.02	.93	.60		
Peanuts	Lb.	.0363[b]	.0325[b]	.0188[b]	.012		
Soy beans	Bu.	1.90	1.56	.63	.44		
Livestock[c]							
Milk cows	Head	82.80	57.11	39.61	32.40	21.40	(1891)
Other cattle	"	40.40	28.08	18.31		14.06	(1894)
Sheep and lambs	"	8.94	5.35	3.40		1.58	(1894)
Hogs	"	13.46	11.36	6.14		4.10	(1896)
Chickens	"	.932	.705	.621			
Horses	"	69.86	60.43	53.37	56.44	31.51	(1896)
Mules	"	83.76	69.17	60.69	61.39	41.66	(1896)

* Compiled from U. S. D. A. Agriculture Yearbooks, except for 1932.

[a] For some of the early and midseason states prices represent approximate seasonal averages.

[b] Average of state prices weighted by total production, which includes peanuts grazed or otherwise utilized as well as those gathered.

[c] Livestock prices as of January 1 following.

[d] December 15 farm prices as reported to the Division of Crop and Livestock Estimates. These are not precisely comparable with December 1 farm prices.

mestic) market prices since charges between farm and market have not in general radically changed in this period.[4] Properly comparable curves would run fairly parallel when plotted on an arithmetic scale but diverge when plotted on a logarithmic scale. In various instances average farm prices for a single commodity do not move closely parallel with quoted or averaged market prices. This is chiefly because of non-constant quality differences and regional variations in production and rate of

[4] Costs of water shipment on the Great Lakes and by sea have fallen substantially in this period, thus tending to narrow the "normal" spreads between exporting and importing markets.

marketing.[5] For these and additional reasons, price index numbers for groups of farm products at the farm and at wholesale markets do not move closely parallel.

One of the commonest assertions in discussions of the agricultural problem, now and over the past decade, has been that its root lies in the disparity between prices of farm products and prices of non-agricultural products. This contrast is variously illustrated, less commonly by the relation between group indexes of prices at wholesale, most commonly by comparisons between the index of farm prices and indexes of non-agricultural commodities at wholesale or an index of prices of commodities bought by farmers, often in other ways. As a rule, the disparities are usually thought of in terms of departures from averages for a 5-year period ending with July or December 1914. Underlying is the assumption that the pre-war relationship represented "parity" then and since.

Such convictions and assumptions have figured heavily in demands for farm relief, particularly price-raising measures. The early McNary-Haugen bills embodied the principle of "ratio prices" for farm products. The slogan "equality for agriculture," virtually incorporated in the Agricultural Marketing Act, rests in part on the same ideas. The voluntary domestic allotment plan, as set forth in the Norbeck-Hope bills of July 1932, includes a price-index-ratio feature.[6] The Federal Farm Board says, in its recent recommendations for agricultural legislation: "If the new method raised prices to domestic consumers to the level of prices of other commodities, that would not be giving farmers an unfair advantage."

I know of no other set of ideas so widely accepted as ground for agitation and basis for action, which supposedly rest on good statistical evidence but do not. I wish to challenge, not the fact that price disparities may and do exist, but the assumptions that a pre-war relationship represented "parity," for that period or

[5] Cf. averages for wheat in recent years, in cents per bushel:

Year July-June	*Average farm price*	*Six market average*	*Difference*
1923-24	92	107	15
1924-25	128	145	17
1925-26	146	155	9
1926-27	124	138	14
1927-28	121	133	12
1928-29	100	111	11
1929-30	105	122	17
1930-31	66	77	11
1931-32	39	55	16

Monthly averages show more striking changes. See *Wheat Studies of the Food Research Institute*, December, 1932, Table XXXIV.

[6] Discussed by the present author in "The Voluntary Domestic Allotment Plan for Wheat," *Wheat Studies of the Food Research Institute*, November, 1932, IX, 36-38, 43-44.

the present, from which disparities can properly be measured, and the idea that disparities so measured can be accepted as true. If it were appropriate here, I should further challenge the view that price disparities, if accurately ascertained, call for correction by price-raising measures.

Look first at Bean's chart (figure 1) of ratio of prices of farm products to prices of non-agricultural products, both at wholesale. Observe how far above previous levels were the ratios for the years 1909-15. Granting that for many purposes the 5-year pre-war base was and is suitable for index numbers, does it strike

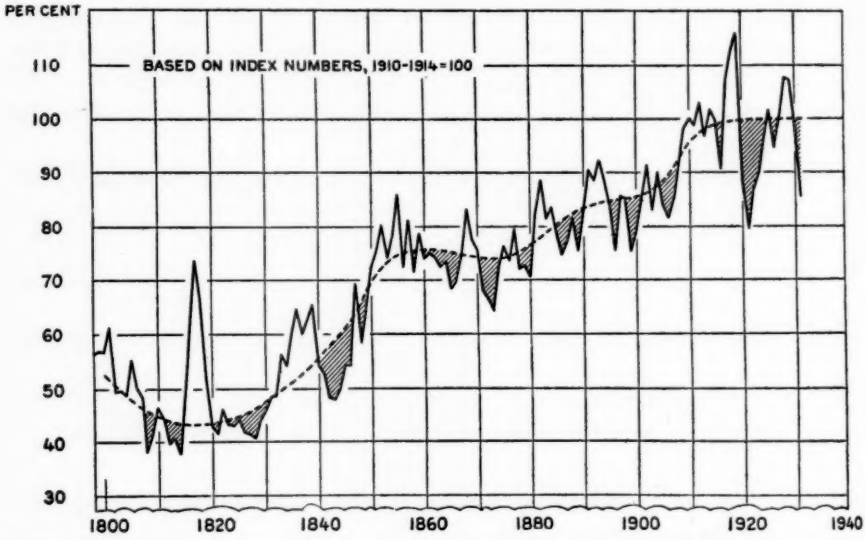

FIGURE 1.—Ratios of prices of farm products to prices of non-agricultural products.

you as statistically warranted that the average for 1910-14 should be regarded as "par" even for that period, to say nothing of years before and after? Consider the similar (though lower) high level in the decade preceding the Civil War, and how ill that average served as par for the 'sixties and 'seventies. This chart alone raises the presumption that prices of farm products were relatively higher in the years immediately preceding the Great War than they could be expected to remain—that they were not at "par" but above it.

Look next at another chart of the Bureau of Agricultural Economics (figure 2). Does it not suggest to you that much of the apparent disparity between prices of farm products and what farmers have paid for goods and services, in recent years, may be

due to an abnormally high base value for the farm-price series? While I cannot here go fully into this matter, I believe that careful, extended investigation would confirm the presumptions that these (and other) charts suggest to me. It seems to me quite conceivable that the pre-war average was from 5 to 10 per cent above what might be called the true par for that period.

Furthermore, normal relationships among group indexes, and much more among individual series and between each of these and a group index, do not remain fixed, but change. More or less divergent changes occur in methods and cost of production, in trans-

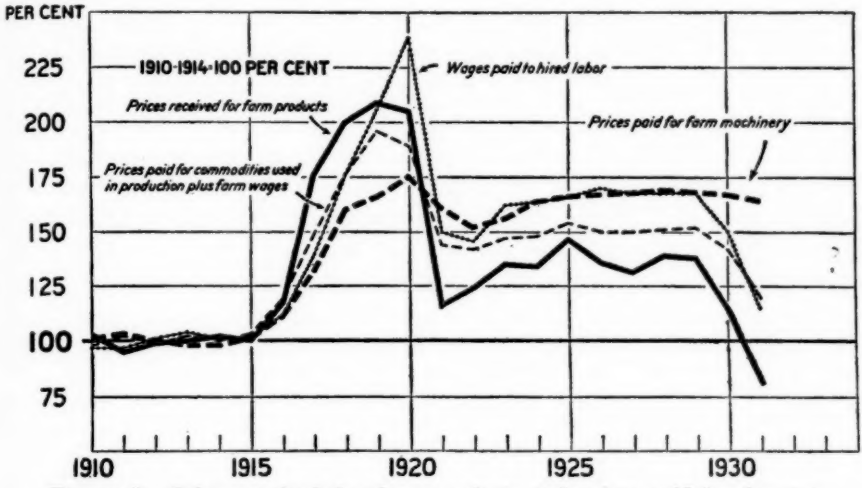

FIGURE 2.—Prices received for farm products and prices paid by farmers for commodities

portation, and in demand; in response, new normal price relationships emerge.[7] Accordingly, the presumption is that even if pre-war normals could be accurately ascertained, they would not constitute the normals for the first or second post-war decade. Whether the truly normal relationship of prices of farm products as a group to prices of other commodities as a group is higher or lower than the true pre-war normal, I am not ready to say, even tentatively; but I think it highly probable that for several farm products, including wheat, the present normal is below the pre-war normal. It is always difficult to define or ascertain what is normal, in equilibrium or in relationships; but let us never

[7] Such changes are obscured for many manufactured goods by changes in quality, style, durability, packing, and accompanying services—as with automobiles, electric refrigerators, cigarettes, even the humble crackers. Lack of homogeneity in the series due to such factors causes price indexes to fail to reflect effective changes in the purchasing power of money over finished goods.

forget that the 100 representing an average for a base period is simply that, and implies nothing as to its normality for that period or any other.[8]

Here is a field of work that has been left largely unexplored. Until it is adequately cultivated, we should apply what I regard as a fundamental principle of statistical exposition. Statisticians owe it to those who use their work to take pains not merely to avoid giving erroneous impressions but to warn against unwarranted inferences that are or may be drawn from their work. On these grounds I suggest that, for example, the common practice of plotting the present index of retail prices paid by farmers on the same chart with national or state indexes of farm prices, or relative prices of individual farm products, should be abandoned as misleading. I believe that a great deal of what is accepted as statistical evidence of disparity between agricultural and other prices is improperly so interpreted, and that the public has not been effectively warned of this or furnished with adequate corrective material. Far-reaching misconceptions on this point have helped to set up policy goals beyond hope of attainment, and to stimulate search for measures that, founded on false premises, cannot work well. Such misconceptions, once firmly established are very difficult to correct; but is it not part of our job to correct them?

Discussion by O. C. Stine

Bureau of Agricultural Economics

In reviewing Dr. Davis's paper, the first question that arises is: Has he treated his subject as one might reasonably expect it to be treated? He recognizes that it is a complex and "enormous" subject. He does not treat it as I would expect him to treat it. A brief description of some price changes, with little explanation of these changes or statement as to their significance, seems to me to be far short of what one might reasonably expect. In fact, Dr. Davis seems to belittle the significance of mere price changes and interpretations of price relations.

In the first part of Dr. Davis's paper, he passes up the opportunity offered by the subject to show the significance of the price changes of farm products in determining changes in agricultural income in the past few years. Under fairly normal or stable business and financial conditions, fluctuations in the prices of many of the individual farm products are related directly to changes in volume of supplies, and such changes in prices have little effect upon income. The outstanding fact about the prices of farm products in the past few years has been that both large supplies and small supplies have been selling at lower and lower prices. While the production of all of the farm products in the United States

[8] Seriously abnormal periods are usually not chosen for a base period, but it is practically impossible to choose a base period that is normal from every point of view.

has continued about on the same level, the average of the price of all farm products fell rapidly and thereby greatly reduced the agricultural income. An evaluation of the present economic condition of agriculture, therefore, requires some explanation of these recent price changes, as well as their description.

Furthermore, Dr. Davis neglects the significance of uneven or unequal changes in the prices of the several commodities, as factors in affecting production and the agricultural income distribution among the several states and regions of the country. To illustrate, the fact that grain prices fell more rapidly and farther than the prices of livestock products, in the earlier part of the present depression, has had a tendency to expand livestock production. Declines in livestock prices, which would normally cause contraction in production, have not had that effect because grain prices have continued relatively lower. Now we have and are facing peaks of livestock production cycles in the midst of the depression. First one class of livestock and then another has expanded or is expanding production. Thus the unequal changes in prices have resulted in great shifts or changes in production, and have affected the incomes of regions and states varying in degree and in time.

Another significant fact about price changes in these past few years is that, while the prices of many agricultural products were falling to low levels, transportation and other distribution costs have remained about constant, and this is affecting our national scheme of production. The marked tendency for specialization in production and the development of highly commercialized agricultural production distant from market has been checked. Under present conditions the depression falls most heavily upon commercial agriculture most distant from market, and especially upon those products of which distribution costs constitute a high percentage of the price to the consumer. This situation is encouraging diversification of production in specialized agricultural regions, which usually depend upon other agricultural areas for food supplies. It is encouraging the development of commercial production near consuming centers and is tending to revive agricultural industry on what has been considered sub-marginal areas. In other words, the production and distribution system, which we had been developing under a higher price level, with fairly stable or normal demand conditions, for a few years, has been greatly disturbed, and we are now engaged in a kind of reorganization which will not be economical or permanent if the general price level for agricultural products is raised in the future or the costs of distribution are reduced more nearly in line with the changes that have taken place in the price level for agricultural products.

The latter part of this paper is devoted to telling us what should not be done with certain index numbers of prices. In criticizing what he considers a misuse of the term "parity," the author overlooks or ignores significant facts about the relationships among prices of commodities. The author insists upon too rigid definitions of "par" and "parity" and requires too high a degree of perfection in a measurement of relationships for any practical statistician. "Par" on the golf course is a standard established by and for good golfers. The weather, variations in the size or make of the ball, as well as the experience or ability of individuals would cause variations in a *real* par; but it is impracticable to be chang-

ing these pars. They have a significance sufficient to justify their use, even if a different one for each and all the golfers who play, and under each and all of the varying conditions under which they play the course. Underlying comparisons by index numbers representing prices of groups of commodities is the elemental justification that economic forces do tend to establish certain price relationships. Following any temporary disturbance of these fundamental price relationships, there is a tendency for readjustment toward more normal relationships through a longer period of time.

Among the agricultural products there is a tendency to maintain some degree of constant relationship in prices by the fact that some producers are always in a position to shift production from one to another commodity, and by the fact that many producers have the alternative of selling a commodity or using it for productive purposes. The well known corn-hog ratio is an example of how short-time variations tend to reestablish themselves over a long period to a normal relationship. Furthermore, prices of many of these farm products are related through demand relationships. Changes in price cause shifts in consumption, with the result that, between a balancing of the price elements in production and of the price elements in consumption, the various groups of agricultural products tend to maintain what may be properly termed a normal relationship through a long period or even in a comparatively short period of time. Whenever the long-time relationship has been disturbed, there is a tendency for it to be reestablished, and its reestablishment can be expected unless there is known to be some fundamental change in either the production or consumption relationships.

It is conceivable that the author of the paper would grant what I have said about relationships existing between agricultural products, but still contend that there is no justification in this for a conclusion that a comparison between prices of agricultural products and of non-agricultural products had some significance. Let us consider the relationships that exist between prices of agricultural and non-agricultural products. The basic fact is, of course, that there are factors making for constancy in volume as well as price relationships, and between the prices of agricultural and non-agricultural groups of commodities as well as among agricultural commodities. If all farmers could buy all the clothes they wanted, there is a limit to the quantities they would buy; and, likewise, if there were no limitations on the quantities of products that they could sell, there would still be limitations on the quantities of products they could offer for sale because there are physical factors limiting what one can do. These relationships do change over a long period of time, but for comparatively short, and even moderately long periods many of them remain remarkably constant. By and large, these relationships change but slowly and not greatly over a long period of time, except, of course, in the case of individual commodities which may be affected by peculiar conditions and marked changes in either supply or demand conditions. Furthermore, the flexibility of our economic organization is sufficient to permit shifts in capital and labor, not only between two agricultural enterprises but also between agricultural and industrial enterprises. This process operates through the shifting of population, transferring of labor, and the shift-

ing of investments.[1] I submit that the proof of this is to be found in a comparison of index numbers of groups of commodities over a long period of years, in which may be observed the tendencies for the prices of these several groups to march along over a long period in almost, if not exactly, parallel courses. In short periods we have marked departures, with a tendency to return from these departures to the long-time course.

Dr. Davis has called attention to certain charts, from which he argues that 1910-1914 can not be considered as par, or the relationships existing in that period as parity. In this I am inclined to think that he has strained at a gnat if he has not swallowed a camel. The selection and use of a base period must be treated as a practical matter. We must recognize

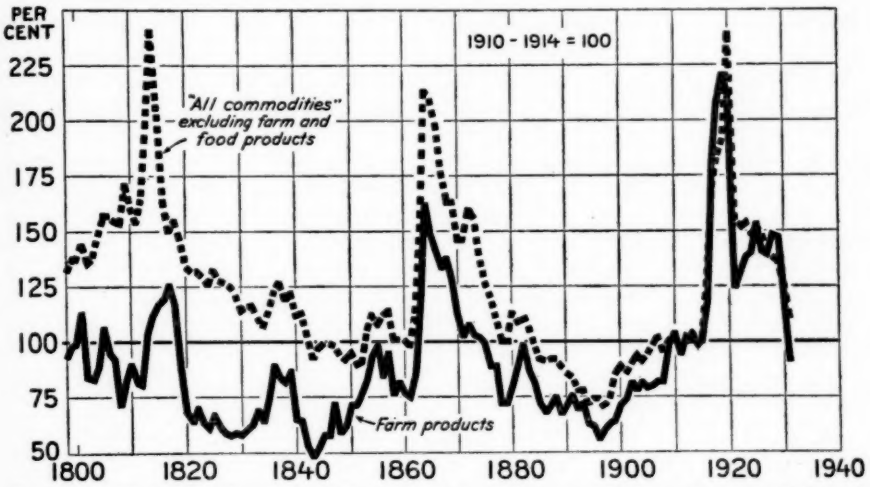

FIGURE 1.—Index numbers of wholesale prices of farm products and non-agricultural products, 1798 to date.

Farm products—1798-1889, Warren and Pearson
1890 to date, Bureau of Labor Statistics
Non-agricultural—1798-1912, Warren and Pearson
1913 to date, Bureau of Labor Statistics.

in a dynamic world that nothing remains fixed absolutely, and must seek for a base to which there is a tendency to return—the best base that we have behind us. Looking over the chart to which Dr. Davis refers, it certainly is obvious that the period 1910-1914 is as good as any if not the best that could be taken in recent years. The decade preceding the Civil War would have served equally well for a long period following that war. Referring to a simpler chart (figure 1) of the prices of agricultural and non-agricultural products over a long period of years, it is easier to observe how using a recent period as a base, prices of agricultural and non-agricultural products, while following courses quite similar, have not been exactly parallel and have moved closer together. Stated in another

[1] This statement is in part an extension of remarks for print.

manner, agricultural prices have moved upward against prices of non-agricultural products. We know very well some of the factors that brought about this more or less gradual change over a long period of years. This fact must be observed in the use of index numbers comparing prices of agricultural and non-agricultural products, in the future as well as in the past. The fact that there is a long-time gradual change in these relationships does not, in my opinion, invalidate the study of the short-time departures as being something significant. In estimating future relationships, we must decide whether or not this tendency for agricultural prices to rise in comparison with non-agricultural prices is likely to continue; and, if we are trying for a high degree of accuracy in our study of relationships, attempt to allow for, indicate, or measure that as a factor in our present and probable future relationships.

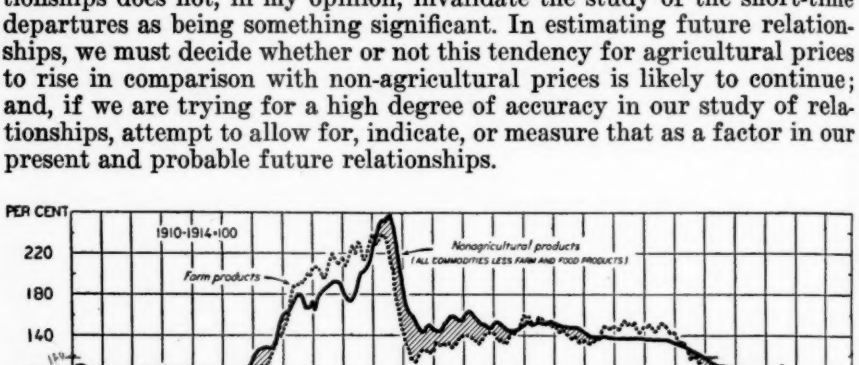

FIGURE 2.—Wholesale prices and ratio, farm and non-agricultural products, by months 1910 to date.

Now let us consider the selection of a base period for price comparisons. In my judgment there are two primary considerations in deciding upon a base period. One is that it be a period of relative stability in the prices of many commodities. The second is that it should be at approximately some level to which there is a tendency over a long period of years to return from the extreme high and low levels. In many respects the 1910-1914 period had a high degree of stability. By stability I include tendencies for the courses of the prices of many different commodities to run parallel and to be in such relationship to each other that no great shifts in production or consumption are stimulated thereby. I am not overlooking the fact that you may find prices of many commodities not running parallel with the all-commodity index number in this period, and that there may be some marked shifts; but these divergences do not characterize the period, as distinct from what had occurred in the few years preceding this period and in recent years.

Looking back over a long period of years, it will be observed that the

price level in 1910-1914 was not far from being the median of the extreme levels, and not far from—though it may be somewhat higher than—the average of the annual price level points over a long period of years. Thus it may be said that in our price history there has been in the long swings a tendency to return to some point not far from the 1910-1914 price level.

The justification for using the 1910-1914 base in studying relationships between agricultural and non-agricultural prices lies in the assumption that over a period of years there is some degree of constancy in the relationship between prices of agricultural and non-agricultural products, and that the 1910-1914 period is fairly satisfactory and even better than many other periods would be, because of the higher degree of stability in price relationships in that period. In the chart referred to, it will be observed that business cycles cause variations from a smoothed line of relationships over a long period of years. We understand quite well why there are these variations. We have seen in recent years how in a depression agricultural prices fall much more rapidly than the prices of many other products (figure 2). We have seen how, as the depression is prolonged, price adjustments are gradually being made in other commodities. There is a reasonable expectation that as we recover from the bottom of the business depression, the prices of agricultural products will be readjusted upwards, while the prices of some other commodities continue a downward readjustment, and that the so called "parity" relationship will be restored. In fact, it is not unreasonable to expect that the 1910-1914 relationship may be more than restored, and that in a business boom period, which may follow the present depression, the prices of agricultural products temporarily may ride high in relation to other prices. But in this I see no reason for condemning the use of index numbers as measures or indications of disparities or the lack of disparities, in price relationships. We may wish for better measures but can not rationally throw away the tools that we have. The accuracy of a measure of disparity at any given time may have to await the test of time, and yet for the time being we must act upon our judgment as to what the future may bring; and that must be based largely upon the experience of the past.

AN EVALUATION OF THE PRESENT ECONOMIC POSITION OF AGRICULTURE, BY REGIONS AND IN GENERAL

Part II. Farm Real Estate Values[1]

E. H. WIECKING
BUREAU OF AGRICULTURAL ECONOMICS

Qualitatively, the present position of agriculture with reference to the principal item on its balance sheet—the value of its real estate—may fairly be described as bordering on the chaotic in important agricultural areas of the country. During the two or three years immediately preceding the price collapse of 1930, it looked as though farm real estate values might be groping for a "bottom," in some sort of adjustment to the prevailing levels of product-prices, cost and incomes. But the drastic decreases in incomes during the last three years brought the sharpest declines in farm real estate values since those which in 1921 and 1922 followed the break of the war time boom. Associated with this new break in values were what appear to be some of the highest foreclosure rates of the entire post-war period, renewed demands for a moratorium on mortgage indebtedness, and rural unrest which in some places has stopped the courts from functioning in foreclosure cases, and in others, has flared into open resistance against eviction.

Quantitatively, the average value per acre of farm real estate for the United States as a whole was, on March 1, 1932, 8 per cent below that which prevailed on March 1, 1912, the earliest year of the available annual record. The aggregate value of all farm real estate on March 1, 1932, may be estimated roughly to have been 37.0 billion dollars, in comparison with a total value of 34.8 billions reported by the Census for 1910. On this reckoning, the aggregate value of our farm lands with their improvements early in the present year was approximately 6 per cent above 1910, but on an enumerated area some 12 per cent greater than thirty years ago. That values today are lower than they were last March, there seems little doubt.

Since the bulk of the available data refer to real estate and not to land in its strict meaning, the term farm real estate will be

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[1] Paper read before a joint meeting of the American Farm Economic Association and the American Statistical Association, Cincinnati, Ohio, December 29, 1932. The writer is indebted to Mr. B. R. Stauber, of the Division of Land Economics, for the more recent data on farm real estate values and changes in farm ownership used in this paper. Most of the data referred to herein may be found in various issues of "The Farm Real Estate Situation," published annually by the Division of Land Economics.

used in this paper instead of the term land as given in the program. Farms are ordinarily sold and appraised inclusive of the buildings, fences and other permanent improvements, and the placing of a separate value on buildings involves special difficulties, even under more normal circumstances. Also in conformity with common usage, the term values has been substituted for the term prices. The available data, unlike time series of commodity prices, are not prices in the sense of representing the results of actual bargain and sale, but are estimates. These estimates may be regarded as approximating probable market prices at voluntary sale, although possibly biassed upward somewhat by inclusion of the element of "holding" prices. Practically no record yet exists of farm realty prices actually paid in the market, and it may be added that under the conditions of recent years, a satisfactory record of that kind would be very difficult if not impossible to get.

Turning now to the available statistical data most adequate for present purposes, Figure 1 presents the annual index numbers of the estimated average value per acre of farm real estate for the familiar geographic divisions and for the United States as a whole, as prepared in the Division of Land Economics of the Bureau of Agricultural Economics. These estimates are based upon reports from the crop correspondents of the Bureau made annually as of March 1. The indices are weighted aggregatives, with constant weights, are weighted within states as well as between states by the total Census acreage of all land in farms, and are relative to 1912-1914 as 100. The year 1912 forms the beginning of the available record. Turning then directly to the post-war period, which for present purposes is the more significant, Figure 1 shows rather wide regional divergences in trend, and illustrates how precipitous has been the decline in farm real estate values throughout the country generally since early in 1930.

For the United States as a whole, the trend after the sharp decline which immediately followed the break of the war time boom, was at a more or less gradually lessening downward rate, until during the 12-month period ended in March, 1928, only a two-point loss was shown, and in each of the corresponding periods ended in March of 1929 and 1930, the recession was only one point in the index. This flattening out suggested that possibly farm realty values were approaching something like stability in adjustment to prevailing levels of farm product-prices, costs, and incomes. It will be recalled that from about 1923 or 1924 through 1929 the trend of the composite index of prices of farm

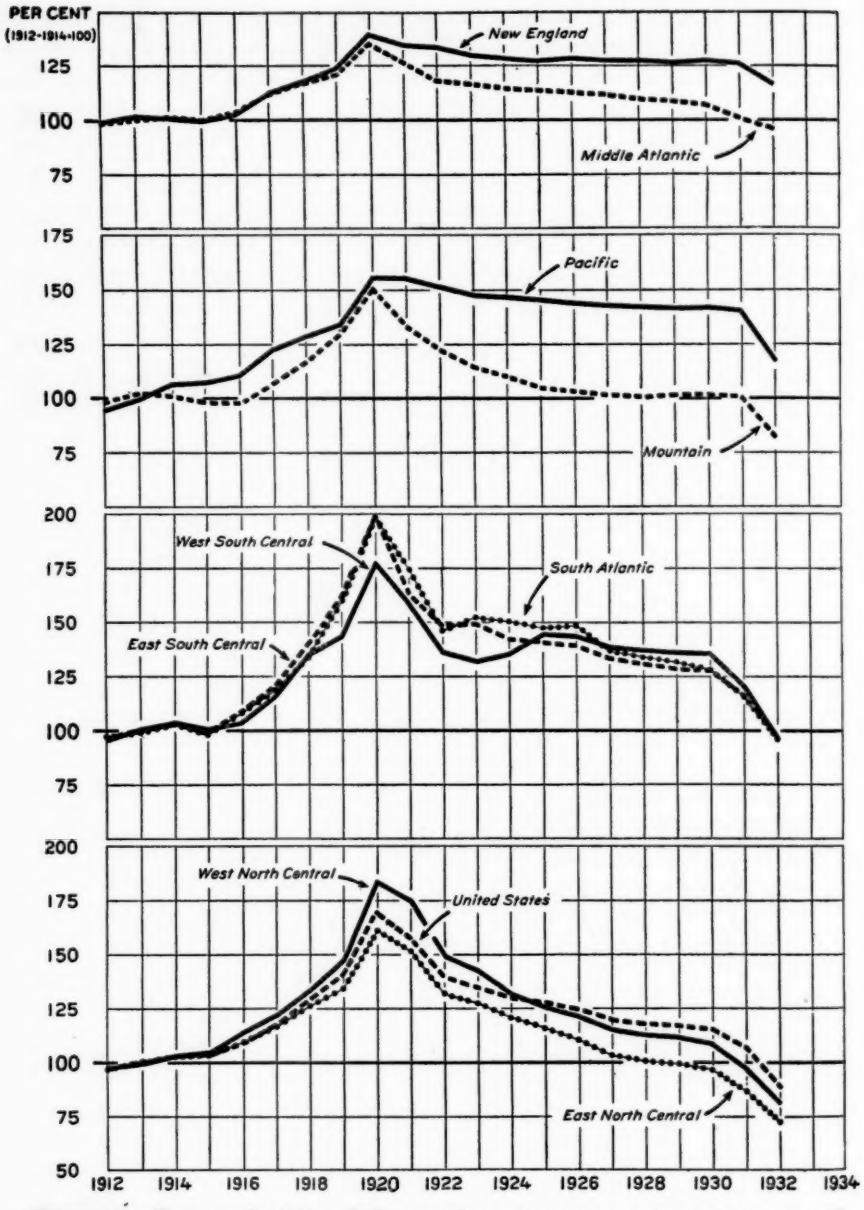

FIGURE 1.—Farm real estate: Index numbers of average value per acre, as of March 1, by geographic divisions, 1912-1932.

Declines in farm real estate values have been greater during the year 1931-32 than during any year since 1921-22. Except in the North Atlantic States, severe declines were general. In more than two-thirds of the States, as well as for the Nation as a whole, reported average values as of March 1, 1932, were lower than the corresponding 1912-1914 averages.

products at the farm was approximately horizontal; likewise the gross income estimates of this Bureau and the net operating returns of individual farmers reporting to the Bureau exhibited something approaching a horizontal trend during this period.

The trend during the period 1920 to 1930 was not uniform in all parts of the country, as is shown by Figure 1. Conspicuous for the comparatively stable or relatively slight downward course of average values were the New England, Middle Atlantic and Pacific States. An important factor, no doubt, was the relatively well sustained price of dairy and poultry products, also of certain fruits and vegetable products; the semi-suburban character of rural lands in parts of these areas; in the Northeast probably a little less "capitalization of the future" than in the Middle West, for example; a lower percentage of farms mortgaged and fewer foreclosures and defaults, together with other considerations special to their respective areas.

The course of farm realty values in the Cotton Belt during this ten-year period ended in 1930 showed more or less of a flattening off after about 1922 and 1923 which is in sharp contrast to the persistent and sharp recession of values in the Middle West. Although again a complex of factors was at work, the principal sustaining factor appeared to have been a sharp rebound in cotton prices in 1922 and a relatively well sustained level therein until the severe price decline of 1930.

The post-war trend of middlewestern farm realty values from 1920 to 1930 has been in contrast with that shown for other parts of the country, for it was persistently and on the whole severely downward, with, however, some appearance of beginning to flatten out during 1927, 1928 and 1929. Only a few of the more important reasons for this behavior may be suggested here: (1) the post-war prices of grains and meat animals on the average were relatively less well sustained than were, for example, the prices of dairy products and cotton; (2) there is reason to suspect that the burden of real estate taxes falls with special weight on lands in this area; (3) relatively more farms are mortgaged in this area than elsewhere; and foreclosures and defaults, and the amount of distress land thrown on the market, appear to have been greater here than elsewhere; (4) data available for certain States in this region (but unfortunately not yet available for other areas) indicate that during the period 1900 to 1920, a value structure had been developing which in its relation to the earnings of farm real estate, placed the value of farm realty

there in a particularly vulnerable position should continued income reverses occur. For example, in Iowa current valuations bore a ratio to current gross cash rents of 7.7 per cent in 1900, 4.3 in 1910 and 3.6 in 1920. The net figure after taxes, depreciation and upkeep in 1920 was 2.6 per cent, in contrast with a first-mortgage interest rate of about 5.5 per cent. Since 1920, that ratio has been steadily widening. In 1925 it was 4.9 per cent gross and 3.4 net. In 1930 it was 6.0 per cent gross, in 1932, 6.6 (net ratio not yet available). This reversal in the trend of the ratio between current rents and currents valuations suggests that an added influence on the downward side of values in certain areas of the Middle West has been a "marking down" of values to a relationship to "earning power" somewhat more in line with going rates on alternative investments of capital.

It has already been remarked that during the years 1927, 1928 and 1929, the declines in the index of values for the United States as a whole were nominal. While this leveling out did not take place to an equal extent in all parts of the country, yet even in the two North Central groups of states, some tendency toward a flattening of the curve had appeared. The flattening tendency had shown itself sufficiently to suggest the interpretation that the worst was not far from being over, and that realty values, which tend to lag, were approaching an adjustment to the prevailing levels of product-prices, costs and incomes. On March 1, 1930, the Bureau's index of average acre-values stood at 115 per cent of the 1912-1914 average. The Census, taken as of April 1, 1930, returned an aggregate valuation of roughly 47.9 billion dollars, a figure 138 per cent of the 1910 total of 34.8 billions.

The drastic declines that have taken place in average farm real estate values since the last census was taken are also shown in Figure 1. Those in particular which took place during the year ended March 1 last are comparable in severity to the declines that took place in 1921 and 1922 and in some cases are even more drastic. Furthermore, they extended to all parts of the country. No state escaped. The various causes therefor are too well known to require more than mention here: sharp breaks in the prices of practically all farm products, an exchange ratio of products sold to commodities bought now around 50 per cent of pre-war, a tax load still in the neighborhood of 2½ times pre-war, a mortgage debt increasingly unsupportable on existing incomes, and an enlarged burden of distressed real estate thrown on an already heavily burdened market.

The record has thus been brought down to the latest date for which the statistics are available. On March 1, 1932, the average value per acre of American farm real estate was 89 per cent of pre-war, with pre-war taken as 1912-1914. In only 15 states were average acre-values higher than in 1912-1914. These were: the six New England States, New Jersey, Maryland, North Carolina, Florida, Alabama, Arkansas, Louisiana, Arizona, and California, and of these, five were less than 5 per cent above. The weighted Divisional indices, with the range shown for individual States within each, were as follows:

Division		*Low*		*High*	
New England	116	New Hampshire	102	Connecticut	133
Middle Atlantic	96	New York	92	New Jersey	118
East North Central	73	Indiana	60	Michigan	97
West North Central	81	Missouri, South Dakota	67	Minnesota	98
South Atlantic	96	Georgia	70	Florida	141
East South Central	97	Mississippi	92	Alabama	102
West South Central	97	Oklahoma	94	Arkansas	104
Mountain	82	Montana	58	Arizona	104
Pacific	118	Oregon	88	California	133

Associated with these adverse developments was a decline during the year ended March 15, 1932, in the rate of voluntary sales of farms to the lowest in the available record, which began in 1925-26. This is shown in Figure 2 by the dashed line. This decline in rate extended to all regions but one, the Pacific. For the United States as a whole, the weighted average rate had declined to 16.2 farms per 1000 during the year ended in March of 1932, as compared with a figure of 29.6 for the corresponding 12-month period ended in March, 1926, the beginning of the record.

Associated also with the drastic recent declines in farm real estate values was a sharp rise in the rate of farms sold at forced sale to the highest figures in the available record, as is shown by the solid lines in Figure 2. On the basis of incomplete data for years preceding 1925-26, these rates appear also to be the highest for the entire post-war period. All geographic divisions showed an increase, although New England least of all. For the United States as a whole, the weighted average rate for all types of forced sales combined rose to 41.7 farms per 1000 during the year ended March 15, 1932, as compared with a figure of 21.6 for the corresponding period ended in March, 1926, the first year of the record, as is shown in the lower left-hand corner of Figure 2. This combined "forced sale" figure used in this chart includes both sale for delinquent taxes and in foreclosure of mortgage, bankruptcy, default of contract, sale or other surrender to avoid foreclosure, including "deeding back."

When these combined forced sale figures are separated into sales of farms for taxes, on the one hand, and into all losses of title associated with mortgage foreclosure, bankruptcy, or default of contract, on the other, each series again shows for the year ended March 15, last, the highest figure in the available record for the United States as a whole. For the delinquent tax classification, the United States weighted average on that date was 13.3 farms per 1000 as compared with a corresponding figure of 4.2 farms per 1000 for the first year of the record, the year

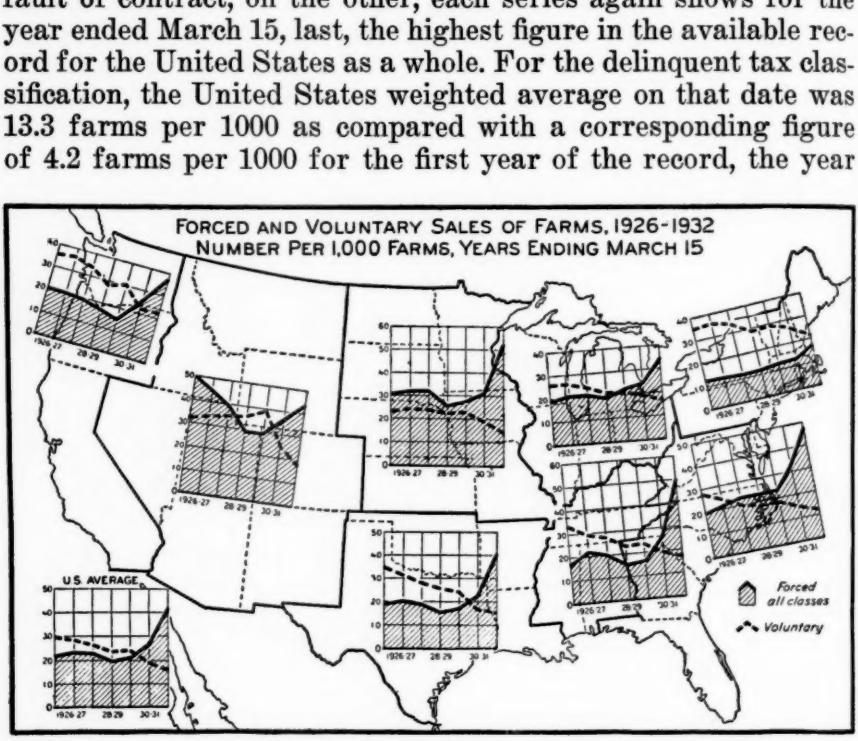
FORCED AND VOLUNTARY SALES OF FARMS, 1926-1932
NUMBER PER 1,000 FARMS, YEARS ENDING MARCH 15
U.S. AVERAGE
Forced all classes
Voluntary

FIGURE 2

During the year 1931-32 the rate of forced sales of farm real estate increased markedly, rising to the highest figures in the available record in most geographic divisions and for the United States as a whole. Forced sales outnumbered voluntary transactions for the United States as a whole and for most geographic divisions.

ended March 15, 1926. For the foreclosure classification the weighted country-wide average rose to 28.4 farms per 1000 as compared with a figure of 17.4 for the first year of the record.

The marked increase in the volume of foreclosed land in the last two years is also illustrated by the total value of real estate "owned outright" by the Federal Land Banks. From September 30, 1930, to September 30, 1931, an increase of 35 per cent was shown. From September 30, 1931, to the same date in 1932, an increase of 46 per cent took place.

The Bureau's figures, it is to be recalled, are now nearly a year old. The Bureau's survey of next March can hardly be ex-

pected to show improvement, rather the signs point to a deepening of the difficulties.

The data given in this paper largely tell their own story as to the current economic position of agriculture with reference to its real estate. One need not stress the implications which the developments of the last two years hold for our whole agricultural credit system more particularly, of course, long-time credit, both with respect to the extension of new credit and to handling of old credits now on the books. Mortgage credit agencies to an increasing degree have been forced to assume the unwelcome role of land owner, and the problems thereby created are great and difficult to handle. Apparently the recent drop in values has served to bring the question of mortgage debt adjustment, heretofore a matter of individual negotiation, definitely into the field of public policy, both state and federal.

The large amount of land involved in tax delinquency has raised new problems for rural taxing jurisdictions. Devised as a penalty for only occasional application in "normal" times, when there was always a market for land, the sale of property for delinquent taxes has proved a rather futile procedure today. The large amounts of land back and on the way back, and which because of conditions in the farm realty market seem fairly certain to remain in public ownership for some time to come, have turned attention to the whole subject of land use planning and to the formulation of policies with regard to retention in private ownership on the one hand, and to public use, acquisition and administration on the other.

The situation has other implications as well. For example, from 1925 to 1930 the percentage of tenancy for the United States as a whole as shown by the Census, increased from 38.6 per cent to 42.4 per cent, the first increase of any magnitude since the 90's. It has been estimated that not less than one-half and perhaps as much as two-thirds of this recent increase was the outcome of loss of ownership through foreclosure, deeding back, or other default. That the percentage of tenancy may be added to still further as a result of recent developments in the farm real estate situation would seem likely.

On the other hand, demoralized as the current farm real estate situation seems to be, there are other aspects which are not to be overlooked in a fully rounded view. What is one man's loss may be another man's gain, and the existing situation no doubt is creating opportunities for acquiring farms on advantageous

terms provided, of course, that the financing can be arranged. Also economists writing a generation hence may assert that in a long-run view the present renewed "deflation" served the important purpose of finally forcing a necessary though painful adjustment in a burden of debt no longer supportable on prevailing price levels. In any consideration of the debt situation one must not, of course, overlook the fact that according to the 1930 census, 58 per cent of owner-operated farms were free of mortgage debt, and that on the mortgaged farms the ratio of debt to value varies greatly. For mortgage-free owners, the recent sharp declines in value do not of course have the same ominous significance as for mortgaged owners whose security is shrinking toward the point where foreclosure threatens. The bulk of "savings" that farmers make, however, are deposited, so to speak, in their real estate, and for many unmortgaged owners, the recent heavy declines in farm realty values have meant a heavy loss if not a wiping out of the savings of a life time.

To the current readjustment in farm realty values there is, of course, another aspect, no doubt on the good side in the long run, but achieved at the cost of tremendous individual sacrifices. This is the realignment of the value structure toward a sounder relationship to earnings, to which reference has already been made. The possible dangers involved in the progressively increased capitalization into values of anticipated future increases in income were frequently alluded to during the war period and even to some extent before by students of rural life. They cited for example, the pressure on the standard of living of farm families trying to pay off 6 per cent mortgages on 3 per cent land; the stimulus to tenancy given when ownership yielded such low returns on the investment; the precariousness of interest and payments on mortgage when adversity threatened. The available evidence, incomplete as it is, indicates that a characteristic tendency of the first 20 years of the century has been reversed.

And finally, one may view the possibility of taxing jurisdictions taking over delinquent land as an opportunity for an alert public policy to prevent at least a partial recurrence in the future of some of the present difficulties. By seeing to it that passage of title to the state is made easy and definite, with reasonable regard for the rights of the delinquent of course; that the land thus acquired is carefully classified, and that appropriate policies are formulated for return to private ownership when that is clearly justified, and for retention in state ownership and control

of land for which eventual return to private ownership does not seem appropriate, a great gain will be made.

I realize that I have not presented a very cheering picture, but I think you will admit that cheer is difficult to draw from such charts as these. Further, there appears to be little in the near-term outlook at the present time on which to base a very optimistic view. As far as the long-run outlook is concerned, a statement at this time is exceedingly difficult to make, important as that would be in a complete evaluation of the present position of agriculture. We are in the first place handicapped by the dearth of inductive studies of the behavior of farm real estate values, and by the paucity of needed data. Values furthermore are in the nature of a resultant of many other interacting factors and the trend of the principal individual ones of these has not yet been forecasted by specialists therein, as for example, the long-run trend in the prices of the various agricultural products. And finally, it is not unlikely that there are such fundamental differences now than obtained before the War that any kind of long term forecasting for farm realty values by analogy with past behavior is open to serious doubt. For example, we have now a restrictive immigration policy—we did not 20 years ago—and we have a fundamentally changed population prospect. About all one can say is that the course of farm real estate values in a longer term view would seem to depend mainly upon

(1) the course of the general price level
(2) the course of the prices of the individual farm products (which may be different from the general price level)
(3) the course of farm real estate taxes
(4) the amount of distress land coming on to the market
(5) developments in the mortgage credit situation
(6) marked changes, if any, in technique

Discussion by Charles L. Stewart
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There is little to criticize in Mr. Wiecking's excellent summary of the annual farm real estate statistics assembled by the U. S. Department of Agriculture for the 21 years beginning in 1912. Presenting these by states, by crop reporting districts, or by counties would serve to bring out little that would be more striking than the presentation by main geographical divisions and for the country as a whole. Use of agricultural regions or type-of-farming areas might be made in presenting these figures for recent years. This applies to the data on transfers as well as on valuations.

It would be helpful if more emphasis could be placed on the qualitative aspects of some of the phenomena reported. For example, what kind of farms have been transferred? Has there been a tendency for transfers to be larger tracts and full farms in recent years, as compared with a previous tendency for transfers to be less than average farm-sized areas? Obervations in Champaign County, Illinois, indicate that a few years ago about 90 per cent of the transfers were 40's, 80's, 120's, 160's, and other sizes below the present average size of farm of 183 acres. In recent years there has been a tendency for full-sized farms to be forced into the transferred list. The statistical and economic significance of such trends needs little emphasis.

In Illinois in March last the index points to a level of land valuations less than two-third as high as in the 1912-1914 period. Developments during the past ten months have been such as to bring our average valuations to figures such as we have not experienced since the late 90's. One intensifying factor has been the tendency of joint-stock land banks, some of them in the hands of receivers, to resell foreclosed farms at figures much below the amount of first mortgage indebtedness, the proceeds of the selling of master's certificates to the new farm buyer being such as to enable more of their bonds to be bought back than were outstanding against the unpaid principal at the time of foreclosure. This may cause low prices to continue in our farm real estate market at least through the first few months of 1933.

A number of significant ratios are derivable by the use of available real estate statistics. In Illinois, the ratio of buildings valuations to total farm realty valuations was apparently lowest in 1910, slightly higher in 1920, and nearly twice as large as in 1910 by 1930. In the United States in 1930, out of every $100 of farm real estate, $27.00 was indicated to be in buildings, nearly $14.80 being in the dwellings occupied by farm operators. Five years before there were no statistics as to farmers' dwellings, but only $23.75 of each $100 total valuation was in buildings, and ten years before only $17.32 was in buildings. The significance of buildings needs more recognition in the annual U. S. Department of Agriculture series.

It is a matter of interest that Mr. Wiecking's paper has not used "Land Prices" as its title but rather "Farm Real Estate Values." The substitution of "farm real estate" for "land" broadens its scope. The substitution of "values" for "prices" is a move in the same direction, but full advantage of this has not been taken in this paper. The value of land in terms of a designated monetary unit is its price, as computed from records of actual sales or from estimates or evaluations. Estimate-based prices are still prices. Sometimes it seems best to call them valuations, in order to give warning that written records of actual sales were probably not being studied systematically by those reporting for given areas. With the high proportion of transfers made for "one dollar and other valuable considerations" as shown in actual records, however, it does not follow that alert reporters in touch with events in a given area may not give as clear a picture in their estimates as outsiders would obtain if forced to depend upon recorded sales for which full consideration is included. Whether called prices or valuations there is reason for confidence in the essential accuracy of the figures in question.

Farm real estate values properly include not merely the power of real estate to command dollars in exchange but other items as well. What can we say of the power of the average acre to command in exchange typical units of goods for family maintenance, what of its power to command in exchange months of labor of hired hands able to save the wages of one or more months each year? What can we say of the power of the average acre to command in exchange its own gross product, or its own net product?

In other words, for the unencumbered owner of farm real estate, how good a store of value has it been? For the hired hand has farm real estate become dearer in terms of his monthly wages?

These are questions which the use of the word values seems to me to raise along with questions of the power of real estate and monetary units to command one another in exchange.

Take the case of farm wages. By 1920 they were increased over pre-war 1.40 times as much as farm real estate had increased; in other words, compared with 1912-1914, farm real estate in 1920, was cheap in terms of farm wages although it was dear in terms of gold. Farm wages in 1932 at 93 were still higher, compared with pre-war parity, than farm real estate at 89. Nevertheless, farm wages, instead of being 1.40 times as valuable in terms of farm real estate as was the case in 1920, were only 1.04 times as valuable in 1932. In other words, farm real estate, if cheap relative to farm wages in 1920 is now not so cheap as in 1920, and but slightly cheaper than in pre-war terms.

It is, of course, a question whether farm wages, as shown in the index are for the year or for shorter periods and whether the index has just the significance that, for the sake of illustration, it has been assumed here to have. It is one thing to be paid monthly or annual wages at an assumed level; it may be another thing to be able to save as large a proportion when the index number is low as when it is high, or when the wage savings are on deposit in a bank to keep them intact in a period of falling prices.

To wring from one's wages, when the wage scales are low, enough to pay taxes on a part of a farm, if taxes have remained high, is more difficult than to get together tax money for a similar acreage by working for wages when wages were higher, unless taxes were also higher in equal proportion. The months of farm wages necessary to equal taxes was less than two-thirds as high in 1920 as in the pre-war period. In 1932 the number was 2.8 times as high as pre-war and over 4 times as high as in 1920.

While to the farm laborer land, if it were tax-free, might seem to be cheaper than in 1920 or even than in the period immediately before the war, it cannot be so considered when it is noted that taxes have taken a considerable part of the product raised for several years and in the last two years a very large proportion estimated at 15 per cent by the Committee on the Agricultural Situation, Association of Land Grant Colleges and Universities. What the farm laborer, or tenant, or one considering operating ownership as a partial or complete substitute for laborer or tenant status, has to consider is the gross value product less taxes, when he considers acquiring title. Title, after all, gives him only what the governments leave him. For example, in 1930, with prices of farm products 117 per cent of pre-war, taxes were 266 per cent of pre-war, taxes absorbing 2.3 times as much product as then. With prices in 1932 only half as

high as in 1930 and taxes but little less than in 1930, about 4.5 times as much product is taken by the governments in 1932 as in pre-war periods, and because prices in 1920 were at 205, while taxes were at 155, about 5.8 times as much product went into taxes this year as in 1920.

It is obvious that farm laborers and tenants, who in normal times would set up demand for farm real estate, cannot be expected to display land ownership appetite when in reality governments would permit them, once they acquired ownership, to enjoy so greatly reduced a part of the fruits of the acreage for which they might turn over their savings in part payment.

That farm real estate has preserved as much of its power to serve as a store of value as it has during the period of high taxes is one of the marvels of the post-war period. An almost pathetic faith in farm real estate on the part of existing owners has given them a holding power of dramatic significance. Families fight to hold their homes, encumbered or unencumbered, using income from all sources, including the personal exertions of their members engaged in occupations at a distance, pulling expenditures for family maintenance and other items to almost unbelievably low levels, in order to hold the farm home.

This power to hold has broken considerably in the second depression of the post-war decline of prices. A third depression of even less proportions than this one may suffice to make leaseholding the topmost ambition of our farmers, even though public bodies hold the fee. In fact, the extension of the present depression over enough years to enable us to designate it as a double-length depression will bring the problem of tenancy to the forefront in the United States as it came to the forefront in England a century ago.

An adjustment by which farmers may give up hopes of acquiring titles to farm land may be welcomed by some of those whose weariness with efforts at ownership may be succeeded by greater trust in governments as landlords than as tax gatherers. Thus far farmers' faith in governments as landlords has been low in this country. Will the next decade see it increase?

THE NATURE AND POSSIBILITIES OF TYPE-OF-FARMING READJUSTMENT PROGRAMS[1]

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The present situation of American agriculture is a challenge to the leaders in agricultural economics and farm management. Will this challenge be accepted by those in positions of responsibility? We may cite the present type of outlook and farm management work as examples of what we have accomplished in our fields. We may point with pride, and justly so, to the rapid progress which we have made in these fields, particularly since the time of the first outlook report in 1922. But are we fulfilling the objectives of our work?

What are the objectives in this work? The national outlook report for 1927 gave as its objective "to give farmers information that will assist them in planning their production programs." But all of us here are agreed that the past five years have enlarged not only our objectives but our perspective of the possibilities in our work. Unless such is the case, we either have made little progress or our former premise was over-ambitious for a new type of work. It is a personal feeling that the goal was a good one at that time and that much has been accomplished since.

However, objectives such as we had in 1927 have led our administrators and others to conclusions such as Director Bliss of Iowa made before the Association of Land-Grant Colleges and Universities in 1930. Director Bliss said, "Outlook reports and outlook conferences are valuable from the standpoint of education but of small consequence from the standpoint of influencing production."

Experience in the last ten years has taught most of us, especially in extension work, that mere price outlook and general information is not sufficient to develop an economic program on the individual farm. Adjustments must be discussed, new possibilities presented, suggestions of various kinds made to farmers with whom we contact in our work. With this in mind let me present the following objective as set out by H. R. Tolley in the October, 1931, JOURNAL OF FARM ECONOMICS on "The History and Objectives of Outlook Work":

[1] This paper was read at the Twenty-third Annual Meeting of the American Farm Economic Association, Cincinnati, Ohio, December 29, 1932.

"The next major step in the development of outlook work should, in my opinion, be to mobilize resources in a similar manner for work on other phases of the program, with major emphasis on determining farming plans and programs that will yield the highest returns in the years ahead in the different agricultural regions of the country, and developing ways and means of getting the results to farmers."

Thus far, this discussion has brought before us two of the three schools of thought in farm management and outlook work. Briefly these three groups might be characterized as:

1. Individual Adjustment Group
2. Regional Planning or Type-of-Farming Group
3. Government Planning Council

The program of the first group is characterized by Dr. Joseph Davis in his paper on "Formulation of an Economic Policy," as one of "timidity." Likewise, the policy of the third or Government Planning Council might be called "cockiness." With Dr. Davis and others, I believe that a middle ground between these two is a highly desirable program to follow. There is need for a more definite determination of what readjustment should be made for any given system of farming but the possibility of selection and modification by individual farmers must be left open. For this reason, I feel that there is a closer relationship between the individual adjustment plan and the regional or type-of-farming plan than between the government planning council and the type-of-farming plan. A further consideration of the characteristics of each of these groups will bear out this statement.

It is the policy of the first group to follow a general educational program by furnishing price outlook and general information to the farmer, allowing him to determine as best he can the adjustments which he should make. This is the plan which has been followed in our work for some years and should form a background for either of the other policies.

While those of us who have presented outlook work, have found it possible to suggest very definite alternative enterprises, the price situation seemed to receive a hearty response. But for the last two years and for 1933 very little opportunity of this kind has been or will be open to us in our state. As a result we now find ourselves giving greater emphasis to suggestions on adjustments in view of the outlook. A glance at the 1932 state outlook reports will convince you of this statement. Were all of these suggested adjustments sound? Many of them read as

though they had been copied entirely from another region and were unfitted for the state concerned. Some of them sounded satisfactory for certain regions of a state and not for others. Many of the best suggestions were not put in print but came from farmers themselves at meetings. These printed adjustment statements were inadequate.

This first policy of individual adjustment is also a slow method. It depends upon educating a very few farmers who will in turn influence others in from one to several years later. By that time, the very adoption of that particular adjustment may be in error. Economic activity moves too quickly to permit any great length of time to elapse between the need of adjustment and the action that should follow.

This policy, it seems to me, is as plan-less for outlook work as the farmer's present method of planning his individual farm business, namely, in his head. Yet the majority of us are firm believers in the budget method for planning production on the individual farm. The need of getting alternatives down on paper where we can compare several plans is evident to all of us. This present policy does not allow for those who are doing the outlooking to see the outlook through the eyes of the farmer. Nor does it allow those who are determining long-time policies to see the possible results of those policies.

With the third group—the government planning council—the program would consist of prescribing definite readjustment plans for all farmers. The majority of us here would agree that it violates most of the principles on which American agriculture and civilization are founded. We are unlike Russia. It might be desirable, if we had an economic adviser for each farmer. But I believe, as James C. Stone of the Federal Farm Board stated before the Land Utilization Conference in 1931, "It is my belief that any plan adopted will have to demonstrate definitely to the farmer just how he is to benefit by it."

The type-of-farming readjustment program of the second or regional planning group follows, as I have already indicated, a middle ground. This group sincerely believes in the foundational work already accomplished or under way. They feel that the next step consists in combining our farm management and outlook work into farming plans for typical farms in each area or region. To be more specific, some of our farmers not only need but will welcome suggested readjustment plans that have been worked out for certain types of farms and which may be applicable to

their own conditions. Certainly, the final judgment will and must be exercised by the individual farmer. In fact, many of our leading farmers will be interested only in the methods used. They are the ones who are now or will be using our budgeting methods. But extension men recognize the inability of any great percentage of the farmers to think through a detailed plan.

A program of this nature has possibilities, then, of bringing about readjustments on a larger proportion of our farms and overcoming some of the objection raised by Director Bliss. Such plans will need to be flexible. Such plans will need to differentiate between the long-time and short-time outlook. Such plans will call for a greater amount of background material and a larger personnel in our work.

To many this may seem to be an over-ambitious program but I present it as an idea worthy of the consideration of this group. Before drawing any conclusions, I would like to have you follow me through the assumptions which I have made and a more complete discussion of the nature and possibilities of a type-of-farming readjustment program.

Assumptions

I have assumed that the individual and collective personnel of our farm management and agricultural economics work is more fully equipped in training, experience and information relative to problems affecting the entire mass of agricultural producers than is the individual farmer. In so far as farmers lack any of these—to that extent will such a program build a firmer foundation.

I have assumed that the adoption of the greatest number and most desirable readjustments in various type-of-farming areas will be secured through plans and programs prepared by trained specialists and farmers in conference. By this means, readjustment should result more quickly.

I have assumed that there is a need for both long-time and short-time adjustments. An outside view of the farm business will, in many cases, revise the relative emphasis upon these two phases to the benefit of the long-time net income of the business.

I have assumed that there are different causes of adjustments to be made. These consist of adjustments relative to agricultural policy, land utilization, tariffs, war debts, international trade, monetary and credit measures, tax reduction and shifting of the tax burden, and freight rates.

I have also assumed that adjustments will need to be made relative to trends in rate of population growth, movement of population to and from the farm, food and clothing habits, release of farmlands for production of human foods rather than horse feed, and agricultural production in competing countries as well as consumer countries.

I have assumed that there are *maladjustments in agricultural production arising from:*

1. Failure to adjust the combination of factors of production to the price situation, for example,
   a. Size of farm (as measured by acres)
   b. Size of business to the manager
   c. Degree of intensity
2. Failure to adjust the combination of enterprises through:
   a. Improved change of combination of enterprises with present enterprise efficiency left unchanged, such as
      (1) Substitution of barley for oats as a feed crop on many livestock farms
      (2) Use of soybean hay on many dairy farms
      (3) Other adjustments in livestock or crop enterprises
   b. Present combination of enterprises left unchanged, with improved enterprise efficiency, such as
      (1) Adoption of improved technique in machinery
      (2) Adoption of better cultural practices
      (3) Adoption of higher yielding strains of crops and livestock
      (4) Adoption of new practices and equipment in the light of different financial situations of individual farmers
   c. Improved combination of enterprises, together with improved enterprise efficiency
3. Failure to adjust to a new financial situation, individually or collectively, such as
   a. Consideration of new practices and equipment in the light of different financial situations of individual farmers
   b. Financially distressed drainage and irrigation projects with undeveloped lands. (Failure of Government here as well as individuals)
   c. Credit institutions in rural territory which are not functioning.

Many other maladjustments will come to your mind but these should serve as examples of the varied and large problems which have to be considered in making suggestions on farm adjustments. Yet our present program provides for the individual farmer making his own plan with little beyond general suggestions upon which to go—suggestions made by many men who have not compelled themselves to go through the same train of thought which the farmer himself must follow.

As an example, what course shall the Corn Belt take with

respect to its vital hog industry in order to meet the contraction in the foreign outlet for pork? Must not the outlook worker budget his plan for this situation before he can hope to answer a similar question from numerous individual farmers?

Let us look into the nature and possibilities of type-of-farming readjustment programs.

The Nature of Type-of-Farming Readjustment Programs

The rather commonly accepted definition of "type-of-farming" described by Elliott and Tolley in the Research in Farm Management bulletin, is used, namely, "a term descriptive of the system of farming found on a group of farms having a high degree of uniformity in the kinds, amounts, and proportions of the crops and livestock handled and in the methods and practices followed in production." I assume that we are sufficiently acquainted with the many studies in type-of-farming areas so that a more complete discussion of this term will not be necessary.

"Readjustment" is described by Dr. C. L. Holmes in his article[2] "Readjustment in Organization for Production in View of the Outlook for Agriculture," as "shifting these (unfavorable) relationships in hope of a better condition."

"Program" has been defined by Dr. J. D. Black in his article[3], "Determining an Economic Policy," as, "a single act or a group of related acts, ordinarily extending over a rather short span of years, which commonly reflects some sort of policy, and gives concrete expression to it."

A type-of-farming readjustment program then will involve (1) determining the most profitable systems of farming and methods of production during the years ahead (which infers a knowledge of economic conditions and outlook work); (2) determining what changes in adjustments may be necessary from time to time; (3) developing the ways and means of securing and supplying the information necessary for farmers to make the adjustments at the proper time. Evidently we must have a relatively homogeneous universe, with rather definite ideas as to the possible direction of desirable shifts for the particular type and we must make this policy effective through a program.

The need of a more homogeneous group of farms than is usually described by the type-of-farming areas becomes apparent. Five main factors appeal to me as being necessary considerations for selecting type-of-farm set-ups in such a program in our diver-

[2] *Quarterly Journal of Farm Economics*, July, 1932, p. 406.
[3] *Economic Policy for Agriculture*, Duddy, p. 5.

sified farming areas. The main types of farms as to sources of income and which are based on soil types, will need to be subdivided as to:

1. Size of farms—measured by acreage
2. Amount of family and operator labor available
3. Financial situation of individual farmers
4. Managerial ability
5. Tenure

While this might seem to give too large a number of programs within an area or state, it will be found that a farm set-up for each important type of farm (sub-divided into the three or four most common size groups) will suffice in most cases. For some purposes a selection of these groups from wider ranges may be desirable in order to bring out more clearly the differences between them and to indicate certain desirable trends. For the other subdivisions under type-of-farm the points of departure from the main plans presented might be generalized quite effectively, if previously prepared in conference.

What methods and principles will be used in developing type-of-farming programs? The synthetic, budget, or substitution method of analysis will be used on typical farms for various types of farms subdivided as above described. The synthetic or farm set-up method of approach is fully described in the bulletin on Research in Farm Management[4] particularly in Project 8 and 8A. Since the majority of our states have prepared bulletins or leaflets describing the budget method of farm planning for individual farms, it will suffice to say that the same general method is used for typical farm set-ups in determining type-of-farming readjustment programs. For this reason, I will mention only briefly the principles which are involved.

According to Dr. Holmes, "The fundamental underlying the whole problem of readjustments is that of comparative advantage and maximum utilization of resources." The maximum utilization of resources is determined by a consideration of the proportional combination of the factors of production with a limitation set by capacity, efficiency and the principle of diminishing returns; and the selection and combination of enterprises, with and without efficiency increased, and with consideration given to conflicting, supplementary, complementary and joint-product relationships.

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[4] Research in Farm Management, Scope and Method, Bulletin No. 13, Social Science Research Council.

In order to use these principles to develop such a program the following type of information will prove helpful:

1. A land utilization and agricultural policy—its considerations and possibilities.
2. Production possibilities of each area and especially of competing areas.
3. Price data.
   a. Price outlook for cost factors
   b. Price outlook for products and alternative products
   c. Farmers' response to price
   d. Consumers' response to price
   e. Relation of local to central market prices
4. Data on present production and practices and possible alternatives.
   a. Crop yields
   b. Livestock production records
   c. Feed and labor records
   d. Input-output ratios for crops and livestock production
   e. Labor and material inputs
   f. Out-of-pocket costs per unit used with each practice
   g. Farm practices for various enterprises
   h. Significant weather data on each farm—such data to be made available from farmers and experimental work
5. Recent improvements in the technique of production not yet generally adopted by farmers and their possible effect on the production cost of different commodities.

In developing a type-of-farming readjustment program, the above principles and information would then be synthesized through a cropping program, a livestock program and a financial summary into "typical" farm plans that would give promise of the largest net returns over a period of years.

The preparation of these farm plans would make available to the extension worker, the following type of material for presentation to farmers:

1. Prepared suggestions on adjustments worked out to show expected results for farms that are typical of various types—based on the best judgment of many people.
2. Comparative statements of two or more premises to show the reasons for concluding to adopt certain adjustments.
3. Blanket recommendations for adjustments which have been tested out. This does not fully guarantee against wrong premises being made, however.
4. Basic material necessary for the research worker that will provide extension workers with a fund of knowledge which is either not now available, or, as yet, in usable form.
5. Material by which the extension worker may take the same outlook on the problem as the individual farmer (viz. with experience, inertia, and the ability to weigh the value of human effort disregarded).
6. A method of planning ahead will be available for demonstration to farmers who have the ability to use it.

7. Adoption by some individual farmers will provide a check on weaknesses in information available and premises made and a more definite check on the worth of the work to farmers.
8. Comparative statements of present type of farm business analyses which will indicate farmers making most rapid adjustments and serve as further illustrative material.

In developing such a type-of-farming readjustment program the final consideration and perhaps its most vital one relates to the agencies by which the program will be determined. For this phase we have drawn heavily upon the Regional Plan for Agriculture as outlined by Dr. Tolley in his article.[5]

Briefly this plan provides for national, regional and state councils consisting of 10 to 20 members each, appointed from among members of farmers' organizations and organizations interested in farming. Each state would select members to the state council, which would select representatives to the regional council which in turn would select representatives to the national council. As a modification in this plan, I might suggest type-of-farming councils within the state based on selection of farmers from our economic groups within the counties. On the advisory councils, county agents, Smith-Hughes instructors, state colleges, and the United States Department of Agriculture would be represented. In practice we would find the advisory group doing the large share of the work and the other council acting in the advisory capacity. In fact, it would seem that the main contribution of the farmers on the council would consist of advice, suggestions and critical judgment of the plans and programs making them more effective and more readily adopted by those whom they were designed to serve.

The duties of such joint councils would consist of (1) zoning land into agricultural and non-agricultural; (2) subdividing regions into type-of-farming areas; and (3) developing a plan for each type-of-farming area. These duties might be handled by two closely coordinated councils. The land zoning and description of the type-of-farming areas might be accomplished by one council. It would be the work of this group to determine the most effective long-time use (from an extensive viewpoint) of our land resources in the various type-of-farming areas. The duties of the second council would consist of developing plans for each type-of-farming area in order to make the most effective use (from an intensive viewpoint) of our agricultural resources. While two separate councils might be used, close coordination

[5] Economic Policy for Agriculture, Duddy, pp. 133-150.

between them and some joint representation would seem desirable and necessary.

The findings and recommendations of the regional councils would be disseminated through publicity in non-agricultural as well as agricultural districts, and explanations through meetings with representatives of local credit, marketing and business institutions. Such information would have the approval of the Agricultural College, farm organizations and the administrative officers of both. They would provide goals for extension work and farmers.

In summary this plan assumes the ability of groups of national, regional, state, and local representatives of agricultural educational institutions and farm organizations to more nearly formulate desirable adjustments in agriculture than can be done by individual farmers, extension workers or small groups of research and extension workers. And perhaps of greatest importance is the increased adoption of readjustments which should result from their combined efforts.

Possibilities of Program

Before discussing the possibilities of such a program let us consider its shortcomings—some might even term them its impossibilities. The major difficulties facing such a program are the large amount of data necessary (so much of which is now lacking), an increased personnel to secure such information, and large amount of conference time to set up and work out such a program. The many complications in arriving at definite conclusions and the number of plans necessary for extension presentation are also objections to the program. To many, the necessity of making rather definite price forecasts both for the short-time and long-time periods will be a serious handicap to the plan. Undoubtedly other objections may be presented.

But these objections to such a program only cause us to take cognizance of the fact that adjustment suggestions are complicated and that a fund of knowledge is necessary to insure their economic soundness. In any case they must cause a greater respect for the ability and courage of those farmers who are now using the budget plan.

Now let us briefly state the possibilities of a type-of-farming readjustment program.

The type-of-farming readjustment program will bring about a coordination and crystallization of ideas in the minds of agri-

cultural economics and farm management workers who work it out, that is unknown under the individual adjustment program. It provides the means of coordinating agricultural policy, land utilization, outlook and farm management.

The cooperation of other subject matter departments will be needed and definitely planned. The preparation of much new but needed material in price outlook, farm business analysis, adaptation of new technique, land utilization and agricultural policy will be called for under such a plan. It will point out many of the weaknesses of our present information which we hand to the farmer and expect him to use. Such a program has the possibility of strengthening the extension presentation of our outlook and farm management material because it:

1. Has a broader, sounder foundation—it will necessitate the research and extension specialist going through the same mental processes which the intelligent farmer follows in making his plans for the following year—will bring before the specialist a viewpoint as to the effect of possible changes in group action of farmers and other classes.
2. Demonstrates a method that all farmers may use.
3. Enables farmers who can follow only, to secure definite suggestions that apply to their type of farm—individual reservations as to human effort and inertia will be made, of course.
4. Provides a means of field demonstrations in agricultural economics through adoption by farmers. These demonstrations will also provide checks on additional materials and information needed to make outlook and program work effective.
5. Provides a more definite check on the worth of our work.

Such a program should influence a larger number of people to act with regard to agricultural production adjustments. This program as worked out with and presented to farmers should be an appropriate one for our democratic civilization.

Such a program should act as a prevention of unsound advice:

(1) relative to wholesale crop acreage reduction without alternatives prescribed
(2) relative to abandonment of land (some such scheme will be necessary to convince industrial trade centers as well as individual farmers of its desirability)
(3) relative to the continuance of the Homestead Act
(4) relative to the possibilities of part-time and self-sufficing types of farms for many people.

And above all, such a program should enable us to more clearly correlate the economic advantage of the individual farmer to that of farmers as a group.

Conclusion

In conclusion I quote a statement made by Nils A. Olsen, Chief of the Bureau of Agricultural Economics, before the National Conference on Land Utilization in November, 1931. This statement so clearly portrays the reason for this paper and its conclusions that I quote at length.

"It is not enough merely to envision the problems. The economic circumstances which now surround and harass our agriculture are largely man-made. The readjustments which will bring us more happily into line with the new conditions also must be largely man-made. Agricultural leaders in these times who merely define the problem and stop there are like the pilot who perceives the channel accurately but who nevertheless drops the wheel and lets the ship bump through the rocks as best she can. . . . The forward look, continuous planning, adjustments before it is too late—adjustments made individually, collectively, legislatively—they are the key to a permanently prosperous agriculture."

Through the development of type-of-farming adjustment programs, greater numbers of individual farmers should react more quickly to readjustments worked out by a group of farmers and specialists and thus benefit through more timely and definite suggestions for readjustment suitable to their particular farm type. And finally, these programs should enable and cause agricultural economic leaders and workers to test for themselves the practicability and advisability of many of the possible suggestions in farming readjustments—all to the economic advantage of American agriculture.

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THE TECHNIQUE OF ASSISTING FARMERS IN INDIVIDUAL FARM ADJUSTMENTS

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In as much as the writer's experience in assisting farmers in business adjustments has been limited to New York State, he will confine this discussion to that experience. The conditions and problems in New York State are not unlike those in most of the Eastern States, and the method of procedure suggested for assisting farmers in their business problems may be adapted to any section of the country.

Over a long period of time, the type of farming in any section is the result of experimenting by a large number of farmers. Farm practices gradually become adapted to the local conditions. When conditions change, adjustments are made slowly. Climate, soil and topography are practically the same as when New York State was first settled, but there have been many changes in other conditions.

From 1800 to 1850, there was a lack of transportation facilities and little of the present day labor-saving farm machinery had been invented. This resulted in a dense settlement of the available area and the establishment of a self-sufficient type of agriculture based on hand-craft methods. Many acres of land were cleared which had never been productive. This is proved by the crop yields of earlier days as reported in the census, and by the size of the barns constructed in these areas. Much of this poor land has since been abandoned, tables 1 and 2.

From 1850 to 1880, there was a rapid development of railroad transportation, which resulted in the opening of the West, the growth of cities and the beginning of a commercial type of agriculture.

TABLE 1.—CROP YIELDS IN 1845 IN NEW YORK*

Crop	Townships adapted to forestry (yield per acre)		Townships adapted to farming (yield per acre)	
	Ohio	*Pharsalia*	*Batavia*	*Caledonia*
Oats (bu.)	24	22	34	38
Corn (bu.)	21	17	32	29
Wheat (bu.)	11	12	17	16
Potatoes (bu.)	66	64	104	128
Hay—1855 (ton)	.8	.6	1.4	1.5

* New York State Census data. A comparison of the 1845 crop yields in the townships of Ohio and Pharsalia, where most of the farms are now abandoned, with yields in the good agricultural townships of Batavia and Caledonia, indicate that yields in the abandoned farm areas always have been low.

TABLE 2.—ABANDONMENT OF FARM LAND IN NEW YORK*

Year	Acres of land in farms	Farm land abandoned since 1880
1850	19,119,000	
1880	23,781,000	
1910	22,030,000	1,750,000
1920	20,633,000	3,148,000
1930	17,980,000	5,801,000

* U. S. Census data. Abandonment in the poor areas began almost as soon as settlement was completed. About one-quarter of the land in farms in 1880 has been abandoned. This abandonment was due primarily to poor soil.

From 1880 to 1910 was the period of invention and introduction of a large part of our present day labor-saving machinery in both agriculture and industry. This resulted in increased specialization, with more people going to the city, and made the economical use of labor and equipment more important than formerly.

These changes in transportation and use of machinery resulting in increased competition from other areas, brought about the greatest shift in eastern agriculture that has ever taken place. In general, these changes meant that the production of the more concentrated and more easily shipped commodities, such as beef, pork, wool, and wheat, became less profitable in the East and the perishable and bulky products, like milk, eggs, alfalfa, fresh fruits and vegetables, became more profitable, tables 3 and 4.

From 1910 to 1920, the increased use of tractors, trucks and automobiles resulted in a decrease in the number of horses on farms and in cities and a loss of the market for timothy hay which was formerly one of New York State's most important cash crops.

The period of generally declining prices that followed the World War was accompanied by the tendency for labor and distribution costs to remain high compared with farm prices. This

TABLE 3.—NUMBER OF LIVESTOCK ON NEW YORK FARMS*
('000 omitted)

Year	Dairy cows	Sheep	Hogs	Horses	Chickens
1840		5,119		475	
1850		3,453		448	
1860	931	2,618		505	
1870	1,124	2,182	995	541	
1880	1,351	1,715	936	615	6,449
1890	1,438	1,529	686	669	8,422
1900	1,502	1,746	658	632	8,965
1910	1,510	930	666	595	10,232
1920	1,482	579	601	543	10,415
1930	1,405	618	220	326	11,954

* U. S. Census data. Sheep and hogs have been disappearing from New York farms for a number of years. They have been replaced by dairy cows. In general, the concentrated and easily shipped products, such as meat and wool, have become less profitable in New York State, and the bulky and perishable products, such as milk and eggs, have become more profitable.

TABLE 4.—RETURNS PER HOUR OF LABOR—NEW YORK
Cost Account Farms, 1914-31

(Returns per hour of labor represent wages left as pay for each hour of labor after deducting all other costs from the total receipts.)

	1914-20	1921-26	1927-31
Hens	$ .67	$ .45	$ .47
Cows	.33	.22	.37
Apples	—	.67	.74
Potatoes	.55	.84	.45
Beans (dry)	.12	—.17	.45
Cabbage	.51	.33	.48
Peas (factory)	—	—	.53
Beans (string)	—	—	.22
Corn (sweet)	—	—	.08
Alfalfa	.97	.75	.61
Other hay	.88	.23	.03
Corn (grain)	.14	—.14	.01
Wheat	.57	—.03	—.11
Barley	—.03	—.14	—.20
Oats	.01	—.20	—.21
Buckwheat	.07	—.10	—.37

Fruit and vegetables and alfalfa, over a period of years, have been profitable crops in New York State. Timothy hay, which formerly showed good returns, is now unprofitable. In general the grain crops have shown little or no profit according to the cost account records which have been kept by farmers since 1914.

has meant that the important farm management factors for success in farming, i.e., size of business, production of crops and livestock, and efficiency in the use of labor, have been increasingly important, tables 5 and 6.

Every farmer in New York State is faced with the problem of adjusting his business to one or all of these economic changes. One farmer's difficulty may be that he is located on soil too poor for agriculture. Another may be faced with the problem that his farm is not adapted to the use of modern equipment. Still another may not be able to finance the changes necessary in shifting from a hay and grain system of farming to dairying. Other farmers on good soil have too small businesses to enable them to use labor and equipment efficiently. Then there are of course, many farmers who had adjusted to most of the chang-

TABLE 5.—CROP YIELDS AND LABOR INCOME
Northern Livingston County—New York*

Crop index (Per cent of average yields)	*Labor income*	
	1908	1928
Less than 70	$ 77	$—618
70-79	103	—230
80-89	453	— 6
90-99	492	338
100-109	607	723
110-119	802	962
120-129	933	973
130 and over	1,044	1,244

* Warren, S. W.—FARM ECONOMICS, p. 1488. In 1908, the difference between the average labor income of the farmers with the poorest crop yields and those with the best crop yields was $967 as compared with $1862 in 1928. The reason for this lies in the increased cost of labor and equipment.

ing conditions that occurred prior to the World War, but who have been unable to withstand the additional burden of deflation, with its accompanying high costs, low prices of farm products, and the necessity for paying off debts incurred at higher price levels.

It is absolutely necessary to know what is causing the trouble before any intelligent adjustments can be made. The farmer does not need specific advice, as much as he needs specific information regarding the nature and permanency of changing conditions. Given the facts, the average farmer will make his own adjustments wisely.

Some of the most important information needed by farmers in planning adjustments is a knowledge of the livestock cycles of over and under production. Unless a person is familiar with

TABLE 6.—LABOR EFFICIENCY AND LABOR INCOME

Northern Livingston County—New York*

Work units per man	*Labor income*	
	1908	1928
Less than 145	$ 97	$—395
145-194	471	45
195-244	735	440
245-294	979	505
295 or more	911	1,381

* Warren, S. W.—FARM ECONOMICS, p. 1490. In 1908, the difference between the average labor income of the farmers with the poorest labor efficiency and those with the best labor efficiency was $814 as compared with $1776 in 1928. When wages are high, the efficient use of labor is more important.

these cycles, he may not know whether a low or high price of cows or hogs is temporary or permanent. The individual farmer cannot do much to prevent the cycles in livestock production, but an understanding of these cycles may prevent him from becoming unduly discouraged at the low point in a cycle and from going out of an enterprise, which over a period of years will be profitable. In a similar way, an individual may be prevented from over-expanding at the high point in a cycle.

In the first part of this discussion the writer has attempted to point out that there is no substitute for the facts, and that the most important problem involved in assisting farmers in making adjustments on their individual farms is that of supplying them with the facts on which to base their decisions. Since farmers need the facts without delay, and it takes time to get them, there have been many attempts at short cuts. In many instances, county committees have been formed that have attempted to formulate an agricultural policy based on a few census data plus many opinions. Census data are of value, but should be supplemented

by local labor income surveys, enterprise surveys, results of cost accounts, and local experiments and studies made in different subject-matter fields.

Having obtained the facts to serve as a basis for deciding what adjustments are needed, the problem is then to make the facts available to all farmers, in order that they may be in position to judge for themselves as to what changes in their individual farm businesses are desirable. Success in farming depends largely on how quickly adjustments are made to meet changing economic conditions. Providing farmers with ample information speeds up the making of adjustments which would eventually be made, but only after much hardship and grief.

One method used in New York State for making available to farmers information on which to plan adjustments, centers around the activities of county wide groups of leading farmers, known as County Agricultural Conference Boards. Members of a County Agricultural Conference Board are selected by the officers and directors of the local Farm Bureau Association, which in New York State is the local county agricultural extension unit. These men are active farmers who have already demonstrated that they can make money on a farm, and are men whose judgment is respected in the community. They also represent the different sections of the county, the different types of farming, and the various farm organizations. And finally, but none the less important, they are men who are interested in the welfare of the agricultural interests of their county, and who have the ability and willingness to spend the time and give the thought required to study their local agricultural problems, and to formulate a long-time agricultural policy.

While these County Agricultural Conference Boards hold a number of meetings, the most important is a two-day conference held at the State College with the extension specialists from the different subject-matter departments. This conference is held early in the fall and starts off the active work of the conference board. The work continues during the winter under the direction of the county agent, and with whatever assistance from extension specialists that is needed. The purpose of this two-day conference is to furnish and familiarize the farmers with all the facts available concerning the agriculture of their own county. During this conference, care is taken by the extension specialists to present background information, rather than to make specific recommendations for changes. (See sample program.)

It is important that the members of these Conference Boards

have plenty of opportunity to arrive at their own conclusions. Given the facts and time to study them, a farmer's recommendations will probably be more valuable than those of an extension specialist because of the farmer's practical experience and familiarity with local conditions. Also recommendations made by a group of farmers after they have had the facts and carefully studied them, frequently carry much more weight than if made by an extension specialist, or county agricultural agent. We should not worry if some of the recommendations made by the conference boards sound very much like those that have been

SAMPLE PROGRAM

MEETING OF CHAUTAUQUA COUNTY AGRICULTURAL CONFERENCE BOARD
ITHACA—WILLARD STRAIGHT HALL—NORTH ROOM
November 23, 1931
Chairman—F. B. MORRIS

9:00	Adjustments Needed in New York Agriculture	G. F. Warren
10:15	Discussion of Recent Developments in the Marketing of Farm Products and Their Application to Chautauqua County	W. I. Myers M. P. Rasmussen
11:30	Adjustments on the Grape Farms of Chautauqua County	M. C. Bond
12:15	Lunch—Willard Straight Hall—Room C	
1:30	Trends in Land Uses and Values	F. F. Hill
2:00	Factors Affecting the Incomes of New York Farmers	V. B. Hart
2:30	How Chautauqua County Farmers are Applying These Factors	L. M. Vaughan
3:15	Recess	
3:30	Selection of Enterprises for New York Farms	J. F. Harriott

November 24, 1931
Chairman—L. R. SIMONS

8:00	Poultry Problems of Chautauqua County	L. E. Weaver
8:30	Livestock Problems of Chautauqua County	C. G. Bradt
9:00	Soil Conditions and Cropping Systems of Chautauqua County	J. H. Barron
9:45	Recess	
10:00	Fruit Problems of Chautauqua County	J. Oskamp
10:30	Problems with Vegetable Crops in Chautauqua County	F. O. Underwood C. B. Raymond
11:30	Forestry Problems in Chautauqua County	J. A. Cope
12:15	Lunch—Willard Straight Hall—Room C	
1:30—3:30	Meeting of the Commodity Committees on Livestock, Poultry, Fruit, Crops, and Forestry.	

made previously by extension specialists. A group of farmers thoroughly familiar with the facts, will often carry the information to many farmers that cannot be reached in any other way, i.e., the type of man who never attends an extension meeting, but learns from his neighbor over the fence.

Another important step in the procedure of the conference board is the county-wide mass meeting. At this meeting the members of the board present their findings and recommendations to the other farmers of the county for their suggestions and approval (Sample programs). This meeting begins the work of getting the information to all farmers in the county. The findings and recommendations of the conference board are printed in a

special bulletin or report and distributed to as many farmers in the county as available funds will permit.

The completion of a conference board report is not the end of the work. The next job for the members of the conference board is to get their findings into the hands of farmers and to get the farmers to use them. The members of the conference board discuss their findings and distribute their reports at Grange meetings, Dairymen's League meetings, and other community meetings. Frequently, members of the conference board, as well as other farmers in the county indicate that they are planning to make some changes in their own businesses as recommended by the board and would like to keep a financial record to see how well these changes pay them. The extension economist and county agent cooperate with such individuals helping them with their accounts, summarizing them at the end of the year, and considering with them what changes should be made in their businesses. It is, of course, impossible for the extension specialist to sit down and discuss with very many farmers, adjustments needed on their individual farms. The fact that a group of successful farmers have studied conditions and made specific recommendations for adjustments will go a long way towards bringing about adjustments on individual farms, through the indirect influence exerted by members of the conference board and persons with whom they come in contact.

The findings of the conference boards are also used as the basis for the county agricultural extension program of activities. The poultry culling and better-pullets campaigns, the alfalfa campaign, the farm management tour, etc., included in the Seneca County program last year, were based on the findings and recommendations of the conference board. The county agent must guide and direct the agricultural policies of his county. Background information such as that assembled by these conference boards will help him in developing a sound extension program, which may be carried out over a long period of years.

The conference boards continue to function after their first report, meeting several times a year, occasionally putting out additional reports based on changed conditions, and also reporting on the progress being made in the county concerning the adjustments previously recommended.

While the point of view which most of the agricultural conference boards have taken concerning their problems has been the long-time outlook, the newly organized Agricultural Conference Board in Genesee County, New York, is now considering

the advisability of drawing up both a short-time and a long-time set of recommendations. Because of critical conditions at the present time, necessitating a close scrutiny of cash expenditures, this report on the short-time outlook and recommendations should be of great value to the farmers of the county.

An agricultural conference board project is a splendid example of a sound way in which to do outlook extension work. A report of an agricultural conference board is nothing more or less than

PROGRAMS FOR REPORTING FINDINGS OF CONFERENCE BOARDS

COUNTY WIDE MASS MEETING—CHAUTAUQUA COUNTY
Court House—Mayville, March 17, 1931
Chairman—W. L. NUTTALL

Thursday 10:00 A.M.

Fruit Outlook for Chautauqua County	C. K. Bullock
Grape Growing in Chautauqua County	J. E. Hall
Vegetables in the Grape Belt	H. Clothier

Thursday 2:00 P.M.

Outlook for Dairying in Chautauqua County	L. M. Vaughan
The Abandoned Land Problem	W. L. Nuttall
Dairy Farming in Chautauqua County	B. Pringle
Crops for Dairy Farms	F. J. Halladay
Poultry Keeping in Chautauqua County	R. Gordon

COUNTY WIDE MASS MEETING—ONTARIO COUNTY
Court House—Canandaigua, March 25, 1931
Chairman—E. W. FERGUSON

Morning 10:00 A.M.

Introductory Remarks	R. W. Pease
Outlook for Livestock Farming in Ontario Co.	L. M. Vaughan
Adjustments Needed:	
Dairy	C. Taft
Sheep	L. F. Allen
Poultry	C. Gauss

Afternoon 2:00 P.M.

Outlook for Crop Farming in Ontario County	L. M. Vaughan
Adjustments Needed:	
Cabbage	W. Gainey
Potatoes and beans	L. F. Wiley
Canning crops	H. Soper
Fruit	J. L. Salisbury
Hay and Grain	S. W. Thomas

NOTE: Mr. Pease and Mr. Bullock are County Agents, Mr. Vaughan, Extension Economist, and the others are farmer members of the Conference Boards.

outlook information tied up with other economic and other subject-matter material.

In concluding, the writer wishes to emphasize the following: Farm conditions are changing rapidly and adjustments to meet these changing conditions are being made slowly. This lag in adjustments in farm businesses is due primarily to the fact that farmers frequently do not have sufficient information on which to judge whether economic changes are permanent or temporary. As success in the operation of a farm depends largely upon the quickness with which adjustments are made, it is the job of extension workers to get the facts, and make them available to farmers in order to help them in deciding what adjustments

are needed in their individual farm businesses. The farmer does not need specific advice as much as he needs specific information. Facts are always right while recommendations may be wrong. A thorough and lasting educational job can be done by familiarizing a group of leading farmers with the facts and then giving them an opportunity to work through to their own conclusions. The recommendations of a group like a county agricultural conference board are more valuable and carry more weight with other farmers than similar recommendations made by an extension specialist or county agent. Such a group will continue to do educational work long after the extension specialist has left for another county. If the facts are obtained and made available to farmers, the writer has no fear concerning the ability and judgment of the average farmer to decide what adjustments are needed in his own business.

TECHNIQUE OF EXTENSION USE OF MATERIAL FROM FARM ACCOUNTING ASSOCIATIONS[1]

R. R. HUDELSON
UNIVERSITY OF ILLINOIS

Farm accounting associations have been organized in several states during the past eight years. Similar associations were functioning in other parts of the world, particularly in Switzerland and Denmark, before they took root in this country. These associations have taken various forms in different states and countries, but this paper will be limited in scope to those associations which have been organized among Illinois farmers beginning with the year 1925. Most of the farmers who organized these associations had become acquainted previously with the application of accounting records to farming. This acquaintance had been formed through the development of a farm accounting service as a part of the state extension program in farm management.

The first association was formed around a nucleus of farmers who had been active in the extension program in farm accounting for about nine years. They therefore knew what such a service involved in the way of responsibilities and results. It was primarily due to the desire of this group for a more intensive service that the first association was formed eight years ago. It is significant that these farmers who had received a certain amount of farm accounting service free for nine years have been willing to pay an average fee of eighteen to twenty dollars a year for a more intensified but similar service for eight years. It is significant, too, that this type of work had its beginning in an extension program although it has proved a useful agency in research and service as well as in extension.

From a research point of view farm accounting associations offer an exceptional opportunity to measure the factors affecting farm incomes and thus to collect new farm management data on a relatively large scale. The records include an itemized statement of money income and expense. There is also a record of physical inputs and products, a more or less complete record of the combination of factors of production and a record of im-

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[1] This paper was read at the Twenty-third Annual Meeting of the American Farm Economic Association, Cincinnati, Ohio, December 29, 1932.

The farm accounting associations in Illinois and the preparation as well as much of the presentation of results have from the beginning been directed principally by Professor M. L. Mosher who served as fieldman for the first association during the first three years and who has since directed the work for all associations. Professor H. C. M. Case, as Head of the Department of Farm Organization and Management has had general supervision of the work.

portant practices or methods of doing things. It is true, of course, that the accuracy and completeness of the data are limited by the necessity for serving a large enough number of farmers so that the fees which they contribute will support the necessary expense. Experience seems to indicate that 200 to 220 farmers can be served by one man with records and service of the kind used in Illinois farm accounting associations.

With 200 individual farm records secured in a compact area where type-of-farming and soil conditions are comparatively uniform and with these records continued through a period of three or more years on the same farms it is possible to apply statistical analysis with results that seem to be more reliable than similar results from data collected by survey or general farm accounting methods. It is true, of course, that the membership of farm accounting associations cannot be looked upon as representative of the rank and file of farmers and the data from these associations will not serve to measure the economic status of the average farm but they do serve to measure the effect on income of varying combinations of the factors of production and varying practices within the range represented in the association. After all, farm management research has more to gain from the study of the upper register of farms than from the lower or less successful group. As compared with surveys or general extension accounting records, farm accounting association records result in greater accuracy and more detail and they supply data on identical farms through a period of years.

Since the service phase of farm accounting association work carries much of the expense the cost per record to research agencies is small and such agencies can profitably take an active part in the analysis of the data.

The service phases of this work include such activities as: (1) checking the individual records for accuracy and completeness on periodic visits to the farms of members of the association; (2) analyzing the individual account; (3) preparing the individual reports by setting up the individual figures in a copy of the association report; (4) visiting each account keeper and discussing with him the application of the findings from his own and other records; (5) assisting the individual in laying out his production and marketing program in line with the findings from individual and group accounts.

The extension phases of farm accounting association work with which this discussion is primarily concerned may be divided

into two main divisions: (1) preparation of results in form for extension use and (2) presentation of the material to farmers.

Under Illinois conditions the results from the analysis of the individual and association records have been prepared for extension use in three forms: (1) mimeographed reports; (2) exhibits for use at the International Livestock Exposition at Chicago and at the larger fairs in the state; and (3) charts for use before group meetings.

Preparation of Reports

The preparation of usable reports begins, of course, with the task of directing the analysis of the data. We have designated the analysis as a research function primarily but the use to which the results are to be put in extension work makes it necessary that the extension and research points of view be combined if the results of the analysis are to be in the most usable form. In the beginning the reports prepared for the Illinois farm accounting associations were an outgrowth of the experience in preparing similar reports in our general state-wide accounting service and resembled those reports closely in content and form. Gradually with closer supervision and more experience the association reports have presented a more thorough analysis. At the same time the farmer members of the associations have increased their ability to understand and make use of these more complicated reports. Up to the present, however, the more technical methods of correlation analysis have not been applied beyond the point where the results can be expressed in a form readily understood by intelligent farmers untrained in the use of statistical expressions.

The heart of these reports has always heen a set of tables showing the individual's figures in the first column, the average figures for the entire group in the second column, the average figures for the one-fifth of the group having the highest rate earned on investment in the third column, and the corresponding data for the low fifth in the fourth column. The number of farms included in each annual report has ranged from 150 to 380 which has given a minimum of 30 farms in the high and low fifths. Our experience has been that in an area as uniform as that covered by these associations, 30 records give a stable average. Probably most extension workers would agree that farmers as well as most other large groups ordinarily will not read tables but the key to their interest is the set of figures representing their own business. There is good educational psychology be-

hind a table which starts with live, current information about the individual's own affairs and leads to a comparison and study of the corresponding facts about the businesses of those who may be more successful, at least in some phases of their operations.

The earliest reports contained in the first table a statement of itemized investment, income, and expense with a computation of the net income, the rate earned on investment, and labor and management wage. A second table gave a few of the more significant figures reduced to an acre basis to facilitate comparison. It also contained a considerable number of simple measures of size and efficiency. Crop production was measured by data on yields and acreage including percentage of land in those crops which cost accounting studies had shown to be the most profitable. Livestock production was measured by the investment and income per acre and income per hundred dollars invested but more satisfactorily by the return per hundred dollars of feed fed in the case of cattle and hogs. Feed cost per hundred pounds of pork gave a fairly satisfactory measure of comparative efficiency in handling and feeding hogs. Labor efficiency was measured primarily in terms of crop acres per man, the only classification being a division into tractor and non-tractor farms. In a similar way horse power efficiency was measured in terms of crop acres per horse. Most of these simple measures of efficiency were also shown graphically in what we have called a farm efficiency chart. This is familiar to most of you and was constructed by placing the figures for average performance across the middle of the page with scales built up and down from this average so that the individual performance could be represented by drawing a heavy red mark across the columns at the point indicated by the individual figures.

From the very first also the association records included cards on which the fieldman recorded whether or not the individual farmer did or did not perform certain practices which were thought to be profitable. These included a list of soil improvement practices, choice of crop variety, selection and care of seeds, preparation of seed-bed, methods of corn cultivation. These practices were then roughly correlated with the net income from the farms.

At the end of each three-year period an additional three-year summary has been prepared giving the analysis of investment, income, and expense as well as measures of efficiency on a three-year basis.

From year-to-year these reports have included additional

steps in analysis. For most of the years since this work was begun in 1925 there has been a difference of about $3000 in the labor and management wage between the high and low fifths of the farms. It has been found possible and profitable to allocate roughly this difference to the major factors affecting income. These major factors include crop yields, efficiency of livestock, kinds of crops grown, amount of livestock, labor costs, power and machinery costs, and higher price realized through higher quality of product or selection of market. It was found that there is a close positive correlation between the rate earned on investment and the number of these factors in which a farm is above average. This correlation was shown by bar charts representing the rate earned for each group of farms, the groups being arranged according to the number of factors in which they excelled. Another favorite scheme of presentation has been to array the farms in equal groups according to crop yield, efficiency of livestock, or other important factors and show by bar chart and table the average rate earned and net income for each group. Each of these charts was accompanied by a list of the practices which had been found associated with the higher crop yields, more efficient livestock, lower labor costs or other factors which were being presented in the particular chart or table.

The reports have also included, since about the third year, tables of physical quantities such as average crop yields. These are given for each group of farms following a particular practice such as a given soil treatment, use of certain varieties, or a particular seed treatment.

The most practical measure of livestock efficiency has been found to be the return per $100 worth of feed fed to each class of livestock and the common measure of amount of livestock has been the value of feed fed per acre. These measures are reasonably accurate because within the small and comparatively uniform area represented in these associations it has been feasible to value feeds at uniform rates, allowance being made for variations in grade. As a rule, also, the livestock and livestock products were shipped to a small group of wholesale markets which do not vary much in the prices which they pay at any given time.

The latest report for the area included in the original farm accounting association in Illinois shows some of the advances made in setting up the important facts for extension use. This report is for the years 1929, 1930, and 1931.

The table showing the itemized investment, income, and expense with net income and labor and management wage, has been retained. So also has the four-column type of table, showing individual data in comparison with the average and the high and low fifths. Most of the simple measures of efficiency mentioned above have been retained but others have been added. A section on size of business gives, in addition to acreage, investment, and income, the total man-work units per farm and total value of feed fed to livestock. A section on intensity of business in addition to gross income per acre gives the value of feed used per acre, pounds of pork produced per acre, and man-work units per acre. A section on organization of the business gives the per acre investment in land, improvements, work-stock, productive livestock, equipment, and feed as well as the percentage of income from crops. A section on crop yields gives in addition to average yields for each crop, a crop index computed by the standard method as used by most workers in farm management. The measure of efficiency of the cropping system has remained about as in the beginning. It is the percentage of land devoted to those crops which cost accounting studies have shown to be the most profitable. There is added, however, a table showing the approximate quantity of digestible nutrients yielded by each of the common rotations together with the percentage of protein and the estimated cost to produce a hundred pounds of digestible nutrients, acre costs being based on cost accounting studies in a nearby area. Since most of the crops grown in this area are feed crops the use of digestible nutrients as a common denominator has been found advantageous.

Since the beginning of this work more progress has been made in measuring livestock efficiency than in measuring crop production efficiency. As compared with the general farm accounting project which preceded these associations, there has been a great deal of progress. Without the supervision which the association makes possible we have never succeeded in getting satisfactory feed records for each class of livestock nor have we secured satisfactory records of physical production. With records of feed as the main input and records of physical production it has been possible to set up standards of performance and to relate the individual and group performance to the resulting income of the farm. The latest association report measures the volume of livestock business in terms of the value of feed fed per acre to all livestock except the work animals. This is itemized by classes of live-

stock to show the relative importance of the various classes. The efficiency of the livestock performance is measured in terms of the returns per hundred dollars of feed fed to all productive livestock with a similar measure for each class of livestock. The report also includes such physical measures as pounds of milk produced per cow and eggs produced per hen. For the hog enterprise an important measure is the feed cost for each 100 pounds of pork produced.

Finally, there has been computed for each farm and each group of farms a general summary figure representing livestock efficiency and called a livestock efficiency index. It is the percentage of the average returns from feed fed to all livestock weighted according to the amount of feed fed to each class of livestock. It is calculated by dividing the total returns from all productive livestock on a farm by the total returns from all livestock if each class had been fed with average efficiency.

The earlier measures of labor, power, and machinery efficiency left much to be desired and progress has been made in this field. The latest reports give for the individual farm and for each group the man-work units per man and a refinement of this measure called a labor efficiency index. This index indicates the number of days of productive work done per man on the individual farm as compared with the average of farms having the same size and proportionate amounts of man-work units on crops and livestock.

As a measure of power and machinery efficiency the latest report uses an index called the horse and machinery efficiency index. It is calculated for the individual farm by finding the number of acres of crops worked on that farm with the same power and machinery cost that was devoted to one hundred acres of crops on the average farm of the same size and having the same amount of livestock to care for.

In the end, as in the beginning, the reports of these farm accounting association studies have indicated only a small part of the difference in earnings between the high and low groups as traceable to the difference in prices received for farm products. There are a few farms, mostly specialized in dairying, which are exceptions to this rule. The measure set up for this factor is the percentage of the group average price which the individual has realized.

The so-called farm efficiency chart referred to above has been found useful enough to retain in all reports. It has been modi-

fied, however, so as to include some of the newer measures of efficiency and to include cross lines which show the individual how he compares for each factor, not only with the average but with each of the higher and lower fifths of the farms in that factor.

The progress made in measures which guide the thinking individual to more successful farming is well reflected in a comparison of the first and last of the reports of these associations.

Preparation and Use of Exhibits

In 1928 and again in 1932 the University of Illinois exhibit at the International Livestock Exposition at Chicago was made up exclusively to present the results of farm accounting studies and practically all of the material in these two exhibits was derived immediately from the farm accounting association studies although it rested on a foundation of earlier accounting studies and cost accounting in a similar area.

The 1928 exhibit consisted of nine panels. The two end panels represented in a combination of picture and model a poorly organized and a well organized farm. The other seven panels presented in charts, pictures, and models, seven of the major factors affecting farm income. These factors were described in the captions some of which were: "More high profit crops," Increased yields of crops," "More efficient livestock," "Larger amounts of livestock," "Better prices for quality," "Control power and machinery costs," "Less labor on balanced farms."

The 1932 exhibit contained eight panels. The first was a "thermometer" chart showing the progress made on an individual farm and emphasizing the place of accounts in attaining efficiency. Other panels are suggested by their captions which were: "Soil treatments and crop yields," "High yielding seed corn," "Crop rotations," "Amount of livestock," "Efficiency of livestock," "Size of farm business," "Avoid an excess of power."

These exhibits which are set up first for the "International" are used afterward for a few of the larger fairs held in the state and they reach a class of people who are not easily induced to attend meetings or farm tours.

Preparation of Charts

The farm accounting association work has been the basis for a large number of the most useful charts that have been employed in farm management extension in Illinois during the past six or

seven years. Most of them are bar charts. One of the best is a chart showing the allocation of the difference in net income between the high and low fifths of the farms. That is, the bars represent the amount of the increased income traceable to (1) higher crop yields; (2) to efficiency of livestock; (3) to the kinds of crops grown; (4) to the amount of livestock; (5) to higher price; (6) to labor efficiency; (7) to efficiency in use of power and machinery. Other charts present the relative rates earned on investment for different groups sorted on a basis of their difference in a particular factor such as crop yields or livestock efficiency. Another chart shows the average rate earned for groups sorted on a basis of the number of factors in which the individual farm was above the average. Most of these charts have been made on oil cloth by a sign painter the size being large enough for a group of several hundred people.

Presenting the Material to Farmers and Others

A considerable number of methods have been used for placing the information derived from farm accounting associations before the public. As mentioned above each member of an association has been visited at his home by the fieldman who presented him with an individualized report and discussed its significance with respect to the individual problems.

Meetings primarily for association members have consisted chiefly of farm management tours, winter meetings to study farm management, and what have been termed "round-up" meetings held at intervals of two or three years.

A farm management tour has been held for each association each year. On these tours a group usually varying from 50 to 200 consisting mostly of association members visits four or five successful farms for the purpose of learning why these farms are relatively successful. The farms are inspected as to the field layout, cropping system, numbers and kinds of livestock, appearance of crops, character of equipment and buildings, etc. Following the inspection the group stops on a high point which overlooks the farm, or at a point where some interesting feature of the farm can be observed or often at some convenient point near the buildings. The farmers to be visited are, of course, consulted before hand and arrangements made in detail as to line of travel while inspecting the particular farm, points at which to stop, and features about which the farmer will be asked to tell the group. At the main stop on the farm the farmer being visited

is asked to give some general history of the farm and his operations on it and to explain such factors as his cropping system, soil treatment, numbers and kinds of livestock, methods of feeding, and methods of handling labor and equipment. Then the fieldman presents some prepared charts designed to show, from an analysis of the individual account, the strong and weak features of the particular farm business. The most common chart for this purpose is the farm efficiency chart referred to previously in this discussion. Often a map of the farm showing its field layout and cropping system also is used. As a rule the discussion becomes quite spirited and general, a considerable number of those present taking part. A tour of this kind has been an annual event in Woodford County, Illinois, for about fifteen years, and it is significant that the attendance and interest have never lagged. Credit is due not only to the subject matter, but the very able organization and direction that these tours have had at the hand of M. L. Mosher who was county agent in Woodford County when the first tours were started and who has since played a major part in this work either as fieldman or extension economist in farm management.

During the recent years winter meetings of association members in each county have been held. These meetings usually last from about 10:00 A.M. until 3:30 P.M. At the first winter meeting in each area a study of good farm practices usually has been made. Each member present has been handed a blank form on which about 160 good farm practices are listed. These cover the whole range of operations common to corn belt farms. The list of good farm practices was made up in conference with subject matter specialists in all departments of the College of Agriculture. As these practices are discussed each member indicates in his copy whether he is following the practice in whole, in part, or not at all. One year each member worked out, on forms provided, the loss or gain on his farm due to his relative efficiency in such factors as crop yields, selection of crops, returns per hundred dollars worth of feed fed to livestock, etc. At the meetings held during December of this year the emphasis was put on the ways in which some members are succeeding in reducing cash costs without seriously curtailing cash income.

"Round-Up" meetings have been held at intervals of two or three years for the purpose of discussing the results accruing from the continued analyses of accounts and records kept by the membership. Significant new features of the study are thus pre-

sented to the membership before being used in the general extension program. Because of the membership and fees contributed, these farmers naturally feel that they have some prior rights in the results and it is good psychology to see that they have the information first.

Besides the meetings primarily for the association membership the results have been used in many meetings over the entire state, but particularly in central and north central Illinois where the type of farming is similar to that of the area in which these associations have been organized. In other parts of the state the general unsupervised accounts kept in the same account book as used in the associations has helped to determine the applicability of the association results to the farming in other sections. The association work has been a stimulus to other farmers who realize that there must be something worth while in farm accounting work or large groups of farmers would not continue to pay out their money for it.

Not only have farmers been interested in the results of these studies, but they have a genuine appeal to groups of business men. They have therefore been presented extensively before meetings of bankers, business men's service clubs and other similar groups.

Discussion by F. P. Weaver

Pennsylvania State College

Only one of the papers in this group, that by Mr. Hudelson, reached the writer before coming to Cincinnati. Therefore, only scant treatment of the other two papers is possible in the discussion paper.

Outstanding in all three of these papers is the idea of having the farmer either think through for himself on the basis of information which the extension forces give him, or assist him in gathering such changes as are necessary in his farm set-up and operation, or of having a group of farmers help us think through the program for readjustments in their community and in their region. This program the extension workers can then present to other farmers in the region, not as something brought to them from the outside but as a program resulting from the mature judgment of the most successful members of their own class.

No doubt both plans are workable and the merits of one as against the other depend largely on the practice to which farmers in a state have become accustomed and to the individuality of the extension specialist.

Some workers no doubt can get results by one method and others by another method. The procedure outlined by Mr. Allbaugh, if it can be put into operation, should make possible the reaching of farmers more rapidly and the effecting of more mass action, while Mr. Vaughan's method is somewhat more conservative and safer from the standpoint

of avoiding the blame for results of decisions which one can not foresee.

In Pennsylvania a large amount of farm management extension consists of adjustments on individual farms. This limits the number of farmers that can be reached but permits of closer study of details on the farms where specific recommendations are made. The results of such experience are then used with groups of other farmers.

The importance of intimate cooperation between the farmer and the extension specialist is suggested in the following quotation from Mr. E. L. Moffitt, in charge of this work in Pennsylvania:

> Wherever records are available, we always use them as a basis of our study of a farm. However, there are many details in the management of a farm business which can not be learned from the records. It is, therefore, necessary to ask many questions and rely upon observation."
>
> "Contrary to the methods of so-called efficiency experts, it is never wise to wreck a man's business completely by entirely reorganizing it. It is better to take the business as it is and suggest changes that can be made with the least effort and expense and still maintain the confidence of the owner. Without that confidence one cannot hope to accomplish anything, even though the farmer may be up against it and you are making the suggestions upon his invitation."

Not only is it essential to preserve the farmer's confidence in the wisdom and dependability of your judgment as a farm management specialist but it is highly important that his confidence in his own ability is not too severely shaken, and often it needs strengthening. Farm readjustments can have only one legitimate purpose and that is to so reorganize the business that the operator and his family will be able to conduct it with profit to themselves and to society, and they should tend to make the farmer more and more self-reliant.

One farm family that gave up keeping farm accounts because no one member was sufficiently interested to keep the books for any length of time was induced to make another attempt by filling out the record each day immediately after the evening meal before any one left the table. This resulted in a keen interest in the farm business on the part of every member of the family. The sons and daughters were learning about the financial details of running a farm. They knew how much money was being taken in on the farm and where it went to, and all became interested in finding ways and means of doing things to increase the returns and of reducing costs in order that there might be greater net returns.

This family was well prepared to make the readjustments needed to adapt their business to present economic conditions and the sons saw for the first time an opportunity in farming that challenged their best efforts and offered a real opportunity for a life work.

Another man has his books to show that this year, 1932, has been the most profitable year since he has been farming. His chief source of income is poultry, and during this past summer he has increased his hen capacity 40 per cent and paid all of it out of this year's business. He has increased his houses, raised and purchased the increase in birds, and paid for them from month to month out of the current month's profit. At the end of the year he will have increased his earning capacity by 40 per cent without one cent of additional indebtedness. This is not typical of the

rank and file of Pennsylvania farmers but represents the possibilities where keen adjustment to present conditions is made.

The problem in Pennsylvania today is not so much a change in type of farming as one of cutting costs to a minimum without sacrificing production and quality. Many farmers are doing this under the counsel and direction of the farm management extension service. Farm records and accounts are an invaluable aid both in effecting the readjustments and in establishing the confidence of the farmer in his calling when he sees that under present economic conditions, with proper adjustment and good management, a margin on the right side of the ledger is possible.

Mr. Hudelson's paper is particularly valuable to all workers in farm management research or extension because it outlines the technique of analysis and emphasizes the factors which have actually been helpful to farmers in planning and replanning their farming operations over a period of seven years. Especially significant are the additional measures of efficiency and efficiency indices added in recent years as experience from year-to-year indicated gaps and shortcomings in the original treatment. The labor, power and machinery indices as refined after years of trial are particularly pertinent in farming adjustments under present economic conditions.

Above all the psychology involved in the using of data which the farmers themselves have had a hand in assembling is probably the most potent factor in this type of extension work. It has all the advantages of encouraging farmers to think that they are capable of assembling information regarding their own businesses which is valuable to themselves and to others; of stimulating to best efforts by appealing to their pride in competing with others; and of the conviction that these results are applicable and practical in their community because they are based upon the records of their own farms. A combination of this method and the presentation of the data described in Mr. Vaughan's paper would no doubt make an ideal extension procedure.

As extension work continues, if it is to become a permanent part of the agricultural set-up in this country, it must more and more, by methods like those outlined in these papers, become interwoven into the very fabric of the farmer's own thinking and acting. It will thus become less and less paternalistic and more a system of self help by farmers under the guidance and help of trained specialists who understand not only good farm management and good farm practices but who so understand human psychology that they are capable of assisting in the development of capable, self-reliant, clear thinking farmers who have a grasp of the factors which affect their business and know how to cope with these factors in a changing environment.

Discussion by Walter J. Roth

Bureau of Agricultural Economics

In Allbaugh's paper we have the development of a procedure which is intended to be helpful to farmers in adjusting their farming operations. This is obviously to benefit them economically so that they may stand in the most effective relation to their fellow economic groups. The informa-

tion to be used is to be local, national, and international in scope and involves elements both economic and physical in character.

On the basis of this procedure the farmer is to have a method of computing plans of operation for his specific farm, in line with the farming type involved, from which plans and the quantitative results achieved the farmer is presumed to choose the one offering the highest monetary return.

Vaughan's description of a procedure followed in New York State would seem to approximate Allbaugh's proposal but with the significant exception that the more or less formal computation of a "forward looking plan" is omitted.

Hudelson of Illinois on the other hand presents a description of the procedure used in his state in bringing to the members of a special group of farmers, the results of farm accounting records kept on their farms. These records involve specific accounts on individual farms. Comparisons are drawn between the individual farm and the group in which the farm is placed. Further, certain factors related to the measure of success, the labor and management wage, are computed.

In Allbaugh's proposed plan and in Vaughan's description of New York procedure the farm accounts do not stand out as prominently as is the case in the Illinois technique. On the other hand in Illinois it would seem as if the local, national, and international forces and their forward looking effect were lost sight of to a far greater degree than is the case in New York or the proposed plan of Allbaugh. That neither of these situations prevail in reality I shall attempt to demonstrate presently.

I shall attempt to discuss the question as to how these three apparently different procedures fit into the general problem of farm management extension.

It is probably not far wrong to say that the purpose of farm management extension is to improve the status of our farming group. This improvement involves the utilization by the group—individually and collectively—of its resources in such manner that it will have for exchange such products and in such quantities that the results of the efforts of farmers may be exchanged for the results of the efforts of others in a manner so that the farming group will be satisfied to continue farming. That this exchange has not always prevailed in its most desirable sense is our continued reason for farm management extension.

In puzzling over the way the world puts itself together I have conceived the idea that the test of any proposed plan of procedure is its trial in order to see whether it works. On this basis the test of our management extension procedure is a trial of it on farmers to see if it works, i.e., to see if farmers accept it presumably because they feel that it pays.

On this basis I feel that we must unqualifiedly "give the palm" to Mosher and his associates in Illinois because their efforts in this specific project are recognized as "having worked."

Similarly I feel sure that a comparable "palm" will be due the New York group because from the esteem in which Hart and his co-workers are held I feel sure that their plan has worked also.

On the other hand from my observations of the sporadic attempts which have been made to present portions of Allbaugh's plan to farmers I feel that up to date this procedure has not worked.

As an avowed advocate of his plan of procedure I feel inclined to attempt an answer to the question "Why is this?"

Is it because the plan itself is unsound? I think not. I feel sure that we all can and will admit that it is a logical procedure, follows the processes the farmer himself must follow in putting together his farm plan and further that it effectively takes into account the various forces involved; physical, economic, biological, and social.

My answer is that we have not correctly understood the procedure and further we have not tried it sufficiently.

By the first part of my answer I mean to imply that in some—perhaps too many cases—we have imagined the procedure as one which would furnish area-wide, preconceived, predigested farming plans which would be applicable to all farms of the area. Nothing could be farther from the truth. Nothing could be worse for the outcome of the efforts made. As the German Pohl, writing in 1881 on "Advance Estimate Plans" for farming, said, "Each farm is a case in itself and requires specific treatment." Certain generalizations can be made, certain groupings and classifications apply. However, when dealing with the complicated matter of choosing and combining the enterprises for production and then choosing the selective factors or means of production to round out those already at hand we have indeed an individualistic and specialized problem. A preconceived notion is certain to strike the snag of the farmer's individualism and sink the bark with its crew and cargo of well meant but faulty intentions. A sympathetic consideration of this individualistic and specific problem in the light of the setting in which it happens to find itself—physical, biological, social, and economic cannot be otherwise than a successful venture. The procedure is merely a procedure, a means to an end and not an end in itself. As a method of planning it is proposed. As a method of planning it must be understood and used.

By the second part of my answer I mean to imply that we have made not only faulty attempts to use the procedure but have made too few attempts. By the time we have worked at this "forward looking procedure" as long as we have attempted the backward, historical effort we shall have not only the report that "it works" but also that it works well, and further, that it has produced results.

And this brings me to the necessity of mentioning a matter which some of us may have overlooked and which some of us may not know. This refers to Hudelson's statement that it is significant that certain farmers of Illinois have been willing to pay a fee of from $18 to $20 a year for their farm accounting service. It is significant but I would insist that the correlation is not first of all, if at all, with the farm accounting work, with the records kept, but primarily with the man or men who have been associated with the analysis and the synthesis of these figures. We can say far more correctly that it is significant that Illinois farmers are willing to pay $18 to $20 for the opportunity to confer so intimately with men like Mosher and Hudelson, men whose practical experience and intuitive insight have carried them and their service beyond the mere routine and stereotyped analysis of past data. These men have been able to see into and through the records, and in the light of the personal contact with these farmers and their farms have given them the "forward

look'' which has been so worthwhile. It would not be far wrong to say that these men could have helped many farms more than $20 worth without records but merely through simple ''observation and deduction'' on their farms.

And here again we must add that this special project described so ably by Hudelson is only a part of Illinois' great effort in farm management extension—only a portion of Illinois' farmers fall into this special category, only a few of her farmers are willing to pay for such service, only a few of them can. There are not enough Moshers and Hudelsons to go around. The other accounting work conducted by Illinois has, first of all, less personal contact, less opportunity for a forward look, and I feel safe in saying, less in the way of comparable results. This may be a reason why Illinois is experimenting in part with portions of Allbaugh's plan.

Similarly Cornell's work is not limited to the procedure so well portrayed by Vaughan. Instead a large part of its effort deals with the more limited and simpler program of farm accounting with the accompanying analysis of the past. The move, in recent years, to attempt this added plan of work suggests the seeking after something new—and better. We must recall that Vaughan's description applies to a program begun in 1928. Results to date are salutary and much may, and can, be expected of a program built on a consideration as broad and inclusive as is this. With the addition of specific, forward looking farm plans, Allbaugh may feel that he has a working ally of note in the Cornell program.

Personally, I have no brief against the farm accounting procedure of the ordinary extension type. I believe it is worth while for itself if nothing further is gained than the development of some stage of orderliness in the farmer's daily round of attention to details as exemplified in good records. I believe the analysis of these historical data is also worth while for despite the danger of a complacent satisfaction with a program of the past which is no longer applicable due to changed conditions, this analysis is in itself worthwhile for it can well precede a forward look. I believe, however, that our farm accounting efforts in farm management extension will receive vitality and bear fruit to a far greater degree if we use them in conjunction with a forward looking plan, in the light of changing conditions and giving due consideration to all the forces involved; physical, social, biological, and economic. This is what Mosher and Hudelson do in their specialized program in Illinois. This is what Vaughan's Cornell groups are doing. This is what Allbaugh is proposing in his procedure.

DEVELOPMENTS WITH RESPECT TO SHORT-TERM AND EMERGENCY AGRICULTURAL CREDIT[1]

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The virtual breakdown of the usual credit facilities in agricultural areas has lead to increased federal efforts to supply credit requirements of farmers and livestock men. In the past year, three major legislative measures for new agricultural credit facilities have been enacted. These are: the provisions for direct loans to farmers for crop-production purposes, the provisions for loans to individuals to assist them in purchasing stock in agricultural credit corporations or livestock loan companies, and the provisions for the establishment of twelve regional credit corporations to make direct loans to farmers.

In addition to the legislation providing new credit facilities, there have been additional measures tending to improve or strengthen existing credit facilities. These may be briefly mentioned as follows: the appropriation of $125,000,000 to strengthen the capital structure of the federal land banks; the amendments to the Agricultural Credits Act which materially improved the marketability of federal intermediate credit bank debentures; and the provisions of the Reconstruction Finance Corporation Act and of the Emergency Relief and Construction Act authorizing loans to agencies financing agriculture. The discussion to follow, however, will be confined mainly to the legislation providing new credit facilities and, to begin with, the provisions and functioning of the three major measures will be outlined briefly.

Crop-Production Loans

Funds for making crop-production loans were provided in the Act which authorized the establishment of the Reconstruction Finance Corporation. Under the provisions of this Act, $50,000,000 of the capital of the Reconstruction Finance Corporation, plus ten per cent of the funds realized from the issuance of debentures by the latter were allocated to the Secretary of Agriculture. The maximum amount which could thus be made available was $200,000,000. Authority was given the Secretary of Agriculture to make loans "to farmers in the several States of the United States in cases where he finds that an emergency exists

[1] This paper was read at the Twenty-third Annual Meeting of the American Farm Economic Association, Cincinnati, Ohio, December 30, 1932.

as a result of which farmers are unable to obtain loans for crop production during the year 1932." The Act further specified that preference in making loans should be given to farmers who suffered from crop failures in 1931.

To administer this fund, a new organization known as the Crop Production Loan Office was set up in Washington. Under the supervision of this office, seven field offices were established at the following places: Washington, D.C., Minneapolis, St. Louis, Memphis, Dallas, Salt Lake City, and Spokane. These field offices operated in cooperation with voluntary local committees, usually with the assistance of the county agents. Applications for loans were first submitted to the local committee for recommendation.

The maximum amount which any individual farmer could borrow was limited to $400. The amount actually approved was based upon the requirements of the borrower for seed, feed for livestock, fuel and oil for tractors, and other necessary supplies. In every instance the borrower was required to give a lien or crop mortgage on his crop acreage. Interest was charged at the rate of 5½ per cent.

Under these provisions, loans were made to 511,000 individuals, or approximately one loan for every 12 farms in the country. Loans were made in every state except Rhode Island. The bulk of the loans, however, was made in the cotton-growing states and in the spring-wheat area. In North Dakota, the number of loans was equal to 50 per cent of the number of farms in the state while in Montana this ratio was 40 per cent. The total amount loaned by the Crop Production Loan Office was slightly less than $65,000,000. The average loan was $127. Average loans were largest in the grain-growing regions and smallest in the cotton areas. The average loans granted by the Minneapolis and Spokane branch offices were $206 and $193. Branch offices at Memphis and St. Louis report average loans of $90 and $97.

Loans to Assist in Capitalizing Credit Corporations

The second major legislative provision for agricultural credit was the appropriation of a $10,000,000 revolving fund from which the Secretary of Agriculture was authorized to make loans to individuals for the purpose of assisting in forming, or increasing the capital stock of, agricultural credit corporations and livestock loan companies. It was felt that by providing financial assistance of this type, the establishment of local credit agencies which could draw upon the resources of the federal intermediate credit banks, would be facilitated. The enactment of this legis-

lation was largely an outgrowth of the experience in making similar loans in 1931 under the provisions of the drought relief legislation. Under the latter provisions, loans totaling nearly $1,500,000 were advanced to individuals for purchasing stock in 52 credit corporations and livestock loan companies.

Loans from this fund can be obtained in an amount not exceeding 60 per cent of the par value of the stock offered as security. The minimum amount loaned to any individual is limited to $500 and no loan will be made to purchase stock in any corporation having a capital of less than $50,000. The maturity of these loans is limited to one year and interest is charged at the rate of 5½ per cent.

Inasmuch as this legislation was followed very shortly by provisions for additional credit facilities through regional credit corporations, there has been little demand for this type of loan. To date, loans have been made to assist but two corporations in an amount of $60,000 representing loans to nine individuals.

Regional Credit Corporation Loans

The third major provision for agricultural credit which to a large degree made the $10,000,000 revolving fund inoperative was the authorization contained in the Emergency Relief and Construction Act for the establishment of regional agricultural credit corporations. Under this provision, the Reconstruction Finance Corporation was authorized to set up and operate not more than one regional agricultural credit corporation in each federal land bank district. Each corporation was to have a capital of not less than $3,000,000 to be paid out of the unexpended balance allocated to the Secretary of Agriculture for crop-production loans. In four districts this minimum capital has been increased to $5,000,000. Additional funds for making agricultural advances may be obtained by rediscounting loans with the federal intermediate credit banks, federal reserve banks, and the Reconstruction Finance Corporation. So far, rediscounting has been limited to the Reconstruction Finance Corporation.

The maximum number of 12 regional credit corporations provided in the Act have now been set up and, in addition, 20 branch offices have been established. Each corporation or branch makes loans directly to farmers without any intermediary organization. The authority for making loans is sufficiently broad to include almost all types of short and intermediate term requirements of farmers. The Act specifies that these corporations are "Authorized and empowered to make loans or advances to farm-

ers and stockmen, the proceeds of which are to be used for an agricultural purpose (including crop production), or for the raising, breeding, fattening or marketing of livestock." The law permits loans to be made for a period of three years, with renewals from time to time which may extend the time of repayment up to a maximum period of five years from the original date of the loan. The present policy of the regional corporations, however, is to grant loans with a maturity not exceeding one year. The rate of interest charged on these loans has been 7 per cent except in those States where a lower legal rate is established by statute. The 7 per cent rate, however, included all inspection costs. The Reconstruction Finance Corporation has recently announced that, beginning January 1, 1933, the interest rate will be reduced to 5½ per cent plus the cost of inspecting loans. The amount charged for inspection, however, is not to exceed one per cent, making the maximum cost to the borrower 6½ per cent.

The three main types of advances which will be handled by these organizations are livestock, crop production, and marketing loans. So far, the chief activity has been devoted to the making of livestock loans. Up to December 16, 1932, there had been disbursed $15,659,000 on 4,473 loans. Additional loans approved number 13,800 in a total amount of $35,911,000. There were also 29,746 applications pending, involving a total of $64,935,000. In all, these requirements total approximately $117,000,000.

Overlapping of Various Types of Credit

The emergency character of these various loan provisions has necessarily resulted in some duplication of existing credit facilities. The urgency of the needs perhaps was such as to make this situation unavoidable. If credit facilities are to be quickly and generally available to meet abnormal economic conditions, it usually is not possible to work out, in advance, policies and procedure sufficiently carefully to avoid these difficulties. The new provisions nevertheless present certain problems which have a vital bearing not only on existing credit institutions but also upon the future development of our agriculture. Attention may be called first to the overlapping of various types of credit facilities available from different federally sponsored agencies.

In the field of production and marketing loans, the regional credit corporations making direct advances to farmers and stockmen compete with credit corporations and livestock loan companies rediscounting with the federal intermediate credit banks. The administration of the former has been directed towards

eliminating this competition by making loans only where the credit could not be obtained elsewhere. Nevertheless, the possibility of obtaining direct loans from the regional corporations without setting up a locally capitalized rediscounting agency, presumably will hold back, for the time being at least, the expansion in the volume of operations of local credit corporations and livestock loan companies. The recently announced reduction in interest rates on loans obtained from the regional institutions will bring the cost of such loans below that which is charged by most of the privately capitalized credit corporations and livestock loan companies.

Indirectly, the same conflict between the future growth in loan operations of the regional credit corporations and the privately managed agencies that rediscount with the federal intermediate credit banks affects the future policies of the Federal Farm Board in the development of its cooperative marketing activities. Under the authority conferred in the Agricultural Marketing Act for "the effective merchandising of agricultural commodities and food products thereof," the Federal Farm Board has made loans of more than $4,000,000 through its affiliated organizations for the purpose of capitalizing credit corporations and livestock loan companies. Of this amount approximately one-half was used in capitalizing loan agencies functioning under the National Livestock Marketing Association. These loan agencies had outstanding livestock loans of approximately $10,000,000 on June 30, 1932. In so far as the need for credit is supplied through the regional corporations, there will be, of course, a more limited field for the financing facilities offered by the cooperatives.

With the provisions of the $10,000,000 revolving fund made available to the Department of Agriculture to assist in capitalizing agricultural credit corporations, and the loan operations of the Federal Farm Board just mentioned, there are two federal agencies engaged in assisting in the capitalization of agencies to rediscount loans with a third federally sponsored agency, the federal intermediate credit bank. There is, however, less duplication here than appears on the surface. The Department of Agriculture is limited by statute to making loans only to individuals whereas the loans from the Federal Farm Board funds are made to marketing organizations.

Problems Involved in Crop-Production Loans

When provision was made for the establishment of regional credit corporations, it was thought in many quarters that these

institutions would be in a position to supply a major part of the credit requirements hitherto met by federal crop-production loans. The prospect that this expectation will be fulfilled does not appear bright in view of the provision in the Act setting up the regional corporations which specified that loans "shall be fully and adequately secured." Under this limitation, it does not appear that the regional corporations will be able to make loans on the sole security of a crop mortgage such as has been the practice in making crop-production loans through the Department of Agriculture.

In meeting the credit requirements of agriculture in the coming year, there is thus a gap in the facilities which is not covered by existing legislation. Funds for crop-production loans have been made available in previous years by special appropriations covering each year's requirements. Several bills have already been introduced in Congress seeking similar funds for 1933. If such funds are made available, however, it involves again many serious problems affecting the welfare of our agriculture. This type of emergency credit, probably better known under the name of "seed loans" is not a new form of federal financial assistance. Since 1918, federal seed loan funds have been available in nine different years. Excluding the first loan which was administered by the Treasury Department, there were granted during this period, a total of 1,071,000 loans, aggregating $136,000,000. However, nearly one-half of these loans were made during 1932, when a departure was made from the previous policy of limiting federal loans to farmers in those areas which had been affected by an unusual climatic disturbance, such as drought, storm, or hail. In earlier years, appropriations were available only to definitely defined areas within a very few states. The loan of 1931 was the first to cover a very extensive area, the expansion of the loan territory being due to the widespread drought of 1930.

The need for this emergency financing year after year in certain areas points to problems that involve more than temporary curtailment of credit facilities. In two of the spring-wheat growing states, "seed loans" have been made available to certain areas in five different years. In six of the southeastern states, such loans have been granted in four different years. Such frequent reliance on emergency financing suggests that reorganization of farming programs and possibly withdrawal of marginal lands will be required to attain a sounder economic organization in these areas. For those borrowers whose credit facilities are limited solely to this federal crop financing, the problem of read-

justing the farming program on a sounder basis is beset with difficulties. The limitation of the use of such funds for expenditures solely incident to the production of crops frequently does not afford adequate opportunity for developing livestock enterprises or for the adoption of better cropping programs involving less dependence upon "cash" crops. If the economic status of large groups of farmers now dependent upon seed loans is to be permanently improved, it is probable that a different type of credit will be required.

From some sources, the criticism is raised that seed loans are contributing to the surplus production by continuing submarginal land in cultivation or in sustaining the operations of sub-marginal farmers. There is, however, another side to this argument which is equally important from the national viewpoint. Under the existing abnormal economic conditions, there is no other alternative to which these financially distressed farmers can turn. From the social standpoint, therefore, these loans may be desirable in avoiding destitution and in preventing an increase in the unemployed. The social structure of many farm communities is likewise threatened by the abnormal economic conditions and temporary financial assistance may be the means of continuing farm families in the possession of homes acquired only after the efforts of a life time.

Contrasting Theories in Providing Production Credit

There have developed two contrasting policies in providing the various credit facilities of agriculture: one based on the theory that there should be some degree of local responsibility in receiving and in passing upon loan applications and the other based upon direct loans without the local intermediary agency. The development of most of our credit facilities has been based upon the practice of receiving loan applications by local groups who were more or less familiar with conditions surrounding each individual loan. The local credit agency also has had a direct financial interest in the loans approved as any resulting loss has first fallen upon the agency's stockholders. Illustrative of this type of development is the country bank, the most important source of production credit for agriculture, which has been dominated by local individuals who were acquainted with the credit requirements of their communities and with the type of security and moral risk involved in individual loans. Likewise in setting up the federal land banks, provisions were made for submitting applications through local farm loan associations made

up of borrowers who were required to take stock in such associations. Also in making the loan facilities of the federal intermediate credit banks available, it was provided that production credit could be obtained only through the intermediary of organizations which are, for the most part, operated by local individuals.

Loans obtained through the seed loan fund or through the regional credit corporations, on the other hand, are made directly to the farmer without having a local agency assume any financial responsibility in connection with their approval. While local committees are used to pass upon applications submitted for seed loans, members of such committees receive no compensation and in many cases their approval of applications is more or less of a routine procedure. While the provisions for credit through seed loans or through regional corporations are of a temporary emergency character and their policies need not necessarily be adopted in our permanent credit facilities, it is probable that these policies will influence the future development of our credit institutions. The problem then presents itself as to which of these two lines of development will provide the best credit facilities.

The arguments put forward for retaining some degree of local responsibility in passing upon and in approving loans may be briefly summarized. A local agency is equipped with the necessary local knowledge to judge the security and moral risk involved in each application. Being more or less in continuous contact with the borrower, it is in position to watch whether the latter (a) utilizes the proceeds of the loan for the purpose for which it was borrowed; (b) conducts his farming operations in such a way that the loan may be repaid; (c) utilizes the proceeds of his farm income in the repayment of the loan. Furthermore, it is argued that the local loan agency, with a direct financial interest involved, will tend to give applications careful and conservative consideration.

That local responsibility in making loans is necessarily a guarantee that loans will be made on a sound basis is contradicted by the experience of the past years. The thousands of country bank suspensions indicate that the judgment and supervision of local persons were not adequate to offset other factors. In the operations of the federal land banks, it is probable that the national farm loan associations have not functioned in as useful a capacity as was originally contemplated by the framers of the Federal Farm Loan Act. In connection with credit obtained from the federal intermediate credit banks, it may be mentioned that 807

credit corporations and livestock loan companies have utilized their facilities up to September 30, 1932, whereas only 411 of such agencies were rediscounting paper on November 30, 1932. Such a large decrease in the number of local rediscounting agencies as indicated by these figures shows that, among other factors, there were also difficult problems involved in providing adequate local responsibility.

In making direct loans, there is the advantage that credit facilities can be made generally available without waiting for local initiative in establishing loan agencies. In handling a large volume of business, it is usually possible to employ more competent personnel. Loaning under a great variety of conditions, likewise, results in the accumulation of experience that is valuable in avoiding unsound risks.

A disadvantage of direct loaning, on the other hand, is the high overhead cost involved in making relatively small loans over a wide territory. The difficulty of inspecting and in collecting loans is materially increased unless loans are concentrated within relatively compact areas. In making direct loans over a wide area, the credit agency must decide whether it will have an extensive organization to reduce the possibility of loss by carefully checking each application before approval and to effect the collection of loans, or whether it will keep its overhead low and trust to other measures for avoiding loss. Under the seed loans, the loss which has resulted from uncollected principal has been relatively high. The amount of principal collected on seed loans made in the period from 1921 through 1930 represented 72 per cent of the original advances. The widespread drought, accompanied by a severe decline in commodity prices curtailed the volume of collections from the 1931 loans, only 34 per cent of the principal of maturing loans having been collected up to June 30, 1932. On this date, however, collateral, principally cotton, to a value of more than $12,000,000 had been deposited by borrowers. With the plan of the regional corporations of sending out field men to inspect each loan before approval, the loss ratio presumably should be greatly reduced.

It has not been possible to give a detailed analysis of all the problems involved as a result of new credit legislation. It is hoped, however, that this discussion may have served to point out some of the more outstanding features of recent attempts by the Federal Government to bolster up our demoralized rural credit facilities, and some of the problems involved.

REORGANIZING OUR AGRICULTURAL CREDIT FACILITIES[1]

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THE BROOKINGS INSTITUTION

When the Agricultural Credits Act was passed in 1923 it was not generally assumed that Congress contemplated the creation of an agricultural banking system quite separate from the existing system of commercial banks. The Intermediate Credit Banks provided for in this Act were expected to fill a gap between commercial banks and long-term mortgage banks. But a succession of years marked by thousands of bank failures, the sharp decline in bank deposits in recent years, and changing loan and investment policies of commercial banks have accentuated the scarcity of funds in rural areas and have enlarged the so-called capital deficit areas which are largely agricultural. As a result of these factors there is an increasing demand for a comprehensive agricultural banking system especially adapted to the requirements of agriculture.

Recent legislative changes have been in line with this general objective. The Intermediate Credit Banks are now authorized to discount paper of any maturity up to three years and so are free to supply the entire short-term requirements of producers if adequate collateral is offered. They have been given the privilege of creating acceptances, while their debentures have been made eligible for the 15-day borrowings of member banks and the market for these securities has thus been materially broadened. Besides liberalizing the Agricultural Credits Acts, recent legislation has made credit available for special purposes through the Department of Agriculture and the Federal Farm Board. Within the past few months the Reconstruction Finance Corporation has set up a nation-wide system of regional agricultural credit corporations to loan directly to producers.

Failure to coordinate the activities of these several agencies has resulted in considerable duplication of functions as well as some conflict in objectives. A number of changes must be made before existing facilities can function effectively as a banking system for agriculture. In the first place, a permanent system of discount corporations must be provided to connect producers with Intermediate Credit Bank funds. Second, the notion must be

[1] This paper was read at the Twenty-third Annual Meeting of the American Farm Economic Association, Cincinnati, Ohio, December 30, 1932.

abandoned that all short-term agricultural credit can be supplied at uniformly low rates. And, third, a clear distinction must be drawn between loans designed primarily to promote cooperative organizations and credit which is extended on conservative banking principles.

The lack of financially responsible discount corporations has been one of the most serious obstacles to the development of the Intermediate Credit Banks. Since these banks obtain their funds, other than their capital, from the short-term investment market, they must operate on a sufficiently conservative basis to maintain their credit at all times. They can extend credit freely only to institutions of considerable financial responsibility whose indorsements protect them against an accumulation of uncollectable paper.

But private capital is not readily attracted into the agricultural loan business on an investment basis. In the southeast and in the north central livestock areas, capital is frequently obtained by requiring borrowers to purchase stock as a condition for a loan. Since the borrowers ordinarily pay for this stock either directly or indirectly from the proceeds of their loans, the capital affords little additional security for the paper rediscounted. Cooperatives and occasionally business firms and commercial banks supplied the necessary capital for credit corporations. However, the difficulties of raising sufficient capital for local discount corporations and of maintaining it intact severely restricted the funds available from the Intermediate Credit Banks. In an effort to meet this situation government funds are now available through the Department of Agriculture and the Farm Board for the purpose of capitalizing additional credit corporations and strengthening the capital structure of existing ones. These provisions for government assistance raise two questions. First, the desirability of government loans to individuals for the purpose of furnishing capital for credit corporations; and second, the propriety of having two separate federal agencies advancing funds for the same purpose.

Federal loans to individuals to enable them to purchase stock in local credit corporations are an unsatisfactory method of strengthening local discount facilities. Such loans tend to perpetuate, without permanently rehabilitating, hundreds of small corporations whose indorsements are not sufficient guaranty against loss to the discounting banks. Of course, if loans are made to establish new credit corporations with substantial capital and

competent management, this objection does not hold. However, in either case loans for the purpose of purchasing stock in a credit corporation encourage the continuance of the dubious practice of requiring producers to purchase stock as a condition to obtaining loans.

The Department of Agriculture has been entrusted with a revolving fund of $10,000,000 for the purpose of making loans to individuals who wish to purchase stock in a credit corporation. As security for these loans the Department accepts the stock purchased. However, the regulations under which the fund is administered preclude the possibility of any considerable amount of it being used. The minimum amount that can be borrowed is $500 and, since only 60 per cent of the par value of the stock will be advanced, only individuals prepared to invest nearly $350 in cash in a credit corporation are eligible for loans. Consequently advances are apt to be limited to a few bankers or business men and to large operators whose annual credit requirements are considerable. No portion of the fund is likely to be available for the small cotton farmer and his credit corporation.

Since steps are now being taken to accommodate farmers through the regional credit corporations of the Reconstruction Finance Corporation, it is of little importance that these stringent regulations in respect to capital stock loans prevail. But if adequate credit facilities are not provided for in all localities, and if pressure is brought to bear to secure a more liberal use of this fund, several serious problems will arise. If loans are made to bankers and business men to capitalize credit corporations which they control, considerable care must be exercised to make certain that the corporations are administered for the benefit of producers and not primarily to enhance business profits.

If advances are made to producers to capitalize the credit corporation from which they expect to secure production loans, there will be serious difficulty in preserving the revolving character of the Department of Agriculture fund. Advances to such borrowers must be kept within an amount that will enable them to liquidate their production loans and also to retire their indebtedness on capital stock loans from current crop receipts. If borrowers find they cannot pay their obligations in full and face the possibility of being unable to qualify for loans the following season, there is a strong incentive to salvage their cash investment in the corporation by evading payment in full on their production note and to allow the Department of Agriculture to take over their

capital stock. The risks are undoubtedly less in the case of loans to livestock producers with considerable equity in their business, but many livestock producers will experience difficulty in repaying capital stock loans bearing interest at 5½ per cent out of current receipts. After a time the government would find itself with a substantial investment in numerous credit corporations throughout the country. If the government is to supply the capital investment, it should participate directly and retain some measure of control over the corporation and avoid capital stock loans with the moral hazards they involve.

The Farm Board, through its loans to cooperative marketing associations, also furnishes capital for agricultural credit corporations. These credit affiliates restrict their loans to members and consequently accommodate only a small minority of producers. Moreover, many areas in need of credit facilities are not yet served by any cooperative which might arrange to finance producers. The fact that cooperatives are of necessity organized along commodity lines, while producers prefer to obtain their loans from a single source, adds further difficulty. Livestock producers might easily secure their entire credit requirements from a credit subsidiary of their livestock marketing association; but the problem is more complicated in the case of crop production loans. Farmers in the Southeast borrow funds to raise cotton, tobacco and peanuts, but they also need funds to permit a more diversified production program.

Crop mortgages are drawn to cover all cash crops but, even if the Farm Board succeeds in organizing all commodity groups, these several crops will be delivered to different cooperatives. The placing of loans, as well as their supervision and collection, would be simplified if all loans were handled by one credit corporation working in close harmony with the marketing associations but operated independently of them. Even if it is correct to assume that cooperative associations will never allow their anxiety for increased deliveries to determine their loan policies, and also that it is desirable to exert pressure upon producers to market their crops cooperatively, there is no justification for the duplication of facilities in certain sections and the neglect of other areas that is bound to occur if the responsibility for establishing discount corporations is left to cooperatives sponsored by the Farm Board.

The regional agricultural credit corporations recently set up by the Reconstruction Finance Corporation offer the best solu-

tion to the problem of connecting producers with outside sources of credit. These corporations may rediscount paper with the Reconstruction Finance Corporation, the Federal Reserve Banks, or the Federal Intermediate Credit Banks. Their capital of $3,000,000, which is supplied by the government, permits them to handle a substantial volume of business on their own resources; but if they elect to rediscount with the Intermediate Credit Banks they would probably be allowed a loan expansion from four to seven times their capital investment. In this way each corporation could handle from $10,000,000 to $20,000,000 of loans annually.

Whether these regional credit corporations with their twenty branches can make loans directly to borrowers over territories as large as the Federal Land Bank Districts more economically and safely than under the previous system of hundreds of local credit corporations remains to be seen. However, it has been demonstrated conclusively that credit corporations operated independently of any other business with which they can share costs and rediscounting only a few hundred thousand dollars of loans annually are not self-supporting and that their indorsements offer slight protection to the Intermediate Credit Banks. If these corporations are gradually eliminated and their loans taken over by the regional credit corporations with their more adequate capital and experienced personnel, it is probable that they can operate more economically than the corporations now serving much of the field.

Since the Reconstruction Finance Corporation is an emergency institution, any machinery which it sets up is presumably of a temporary character. There is no reason, however, that the regional credit corporations cannot be continued if they prove successful and a demand for their services persists. If they should become a permanent part of our agricultural credit system, the Intermediate Credit Banks would be the logical outlet for their paper. Although they are now permitted to rediscount with the Federal Reserve Banks, criticism is certain to arise if non-member institutions which neither maintain deposits with the Reserve Banks nor contribute to their capital investment are given too ready access to their funds.

If the regional credit corporations are retained, several measures can be taken to insure economy and safety in their operations. Their accounts and corporate identities should remain separate from those of the Intermediate Credit Banks, but it

would save time in final approval of loan applications—as well as overhead expense—if the main office of the credit corporation were located in the same city and preferably in the same building with these banks. Additional branch offices could be established wherever necessary, and of course each corporation would have to maintain an adequate staff to field men to investigate loan applications, to make inspections, and to assist in the collections of loans.

Although the determination of loan policies and final action on all loan applications should be the responsibility of the credit corporations working in close harmony with the Intermediate Credit Banks, it is desirable to have sufficient local financial responsibility to eliminate losses, particularly those which arise from the misapplication of loan proceeds and the failure to apply crop receipts to the liquidation of loans. Limited liability associations might be formed in each community composed of twenty or more borrowers, and each borrower might be required to assume responsibility for losses up to 10 per cent of his loan. This amount would be deducted from the proceeds of his note and held in a loss reserve fund. After actual losses were determined, any balance should be redistributed to the producers who contributed to the fund. This arrangement would not only tend to reduce losses but would reduce the costs of handling a given volume of business. Loan applications could be submitted as a group and field men could make the necessary investigations in a minimum of time and at less expense.

A number of difficulties will arise in setting up these local units. The better credit risks in a community would not care to assume even a 10 per cent liability for the losses of certain producers. However, there is nothing to prevent the formation of more than one local group if this is necessary to obtain a fair classification of credit risks. If for any reason a local association cannot be formed or a producer cannot identify himself with one, the credit corporation can loan to him directly if it considers him a good risk.[2]

The regional credit corporations should remain separate legal entities distinct from the Intermediate Credit Bank of their district. This arrangement has the advantage of permitting more flexible loan policies. Since the corporations have substantial

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[2] The Farm Loan Board now takes the position that if a credit corporation requires borrowers to contribute to a loss reserve it is in effect charging them more than the authorized spread above the discount rate and hence these loans are ineligible for discount. If the plan of utilizing limited liability associations is adopted, loans originating in this way must be made eligible for discount with the Intermediate Credit Banks.

capital investment they are not wholly dependent upon rediscounting for their loan resources. They can extend loans which they consider sound which are not acceptable for discount. In the second place, it is imperative to safeguard the credit of the Intermediate Credit Banks. If losses occur they would fall in the first instance upon the separately capitalized credit corporations, and thus would be less likely to affect the status of Intermediate Credit Bank debentures.

But even after satisfactory discount facilities are established there will be a large segment of the farm population that cannot qualify for loans because of lack of acceptable collateral. Heretofore many of these producers have received seed loans from the Department of Agriculture. Others have regularly depended upon trade credit. Some method should be devised by which a substantial portion of these farmers could be financed through the regular agricultural banking channels. Inasmuch as they have little or no security to offer other than crop liens, and since losses on seed loans have averaged more than 20 per cent of the principal amount even before the last two years, it is apparent that these farmers cannot be accommodated in the usual manner.

Since the proceeds of seed loans are expanded primarily for fertilizer, feed, and farm supplies, advances for such outlays might be handled with the assistance of cooperative purchasing associations. Instead of a cash loan a producer might be given the right to purchase certain amounts of specified supplies from a cooperative association. The amount of the loan and the distribution of proceeds would be approved by the credit corporation. The producer's note covering the purchase price could be given to the purchasing association, which could indorse it and rediscount it with the credit corporation. The cooperative would be obliged to protect itself against losses by adding a sufficient percentage to the sales price to enable it to set up a loss reserve. If these loans were extended with considerable care they should not involve the credit corporation in any serious losses. Since the paper would not be eligible for discount by the Intermediate Credit Banks under the present ruling, the corporation could charge a higher rate on such paper if this seemed desirable.

All producers who now receive advances from the seed loan offices could not expect to receive credit even in the form of supplies, for the cooperative would not be willing in every case to indorse the notes. The borrowers who are responsible for the heaviest losses on seed loans would undoubtedly be eliminated as bad moral risks or as submarginal producers. The others

could then be accommodated probably at a cost much lower than they would be obliged to pay to local merchants for similar accommodation.

A short-sighted concern for lower interest rates has been another serious obstacle to the development of an adequate agricultural banking system. In its efforts to assure farmers interest rates comparable to those enjoyed by commercial and business enterprises, Congress handicapped the Intermediate Credit Banks with narrow operating margins. Each discounting bank is required by law to make all its advances on a margin of 1 per cent above the rate on its last issue of debentures, while at present credit corporations rediscounting with the Intermediate Credit Banks are limited by administrative ruling to an operating spread of 3 per cent above the discount rate. The Farm Loan Board is free to increase the corporation's spread if it sees fit but, since Congress obviously intended to reduce rates to borrowers if possible, the Board has been reluctant to authorize rates commensurate with the costs and risks involved.

The narrow operating margins allowed discounting corporations have had several undesirable results. When discount rates are at the present level of 3 and 3½ per cent, credit corporations cannot charge their customers more than 6 and 6½ per cent without making their paper ineligible for discount. Even when discount rates are at 4 and 5 per cent, a 3 per cent operating spread forces corporations in high interest areas to accommodate borrowers at rates below the prevailing level of interest charges. Thus far these restrictions have had the effect of discouraging discounts rather than of reducing interest rates to borrowers.

Presumably the regional credit corporations which are capitalized by government funds would not restrict loans merely because the advantage of lower discount rates would have to be passed on to borrowers. Consequently if they continue to operate after the present emergency and rediscount with the Intermediate Credit Banks, their activities may exert considerable pressure on local interest rates.

An operating spread of 3 per cent, however, is not sufficient to cover the costs of a large portion of the business that otherwise might be handled by credit corporations rediscounting with the Intermediate Credit Banks. It is patently absurd to insist that all loans in an industry as varied as agriculture be handled on a similar margin. Crop production loans, advances for general agricultural purposes, or small livestock loans are expensive to

handle; and in the case of crop production loans loss ratios are extremely high. Although it is highly desirable to accommodate producers at rates as low as is consistent with the risks involved, there is no economic argument for rates so low as to jeopardize continuity of loan services or so low that lending institutions are driven to doubtful expedients to supplement their operating incomes.

Efforts to evade the restrictions upon operating margins and to obtain sufficient income to cover costs have been the source of constant friction between the discount corporations and the Intermediate Credit Banks and have frequently resulted in penalizing the better credit risks for the benefit of poor risks. Some corporations retail farm supplies to supplement their interest income; others, with the approval of the Farm Loan Board, have charged fees to cover the actual cost of placing the loan and inspecting collateral; others required borrowers to contribute to a loss reserve until the Farm Loan Board ruled that this practice was merely a device to enhance interest rates above the amount authorized and disqualified loans carrying this requirement for discount. The common practice of requiring borrowers to purchase stock in a credit corporation is not only a means of raising necessary capital but, inasmuch as few corporations have been able to maintain their capital intact over a period of years and only an occasional one pays dividends on such stock, is also a method of sharing costs of operations with the borrowers. Obviously the costs fall heaviest on the borrowers who pay their accounts in full.

There is no necessity to continue the pretense that all producers and all types of loans can be carried on the same operating margins. The privilege of adjusting these margins rests with the Federal Farm Loan Board and they have been increased at various times. Each Intermediate Credit Bank is in a position to determine what margins will permit corporations in its district to cover operating costs—including a modest return on capital investment—and also to accumulate sufficient reserves to absorb losses.

So long as small credit corporations, operating at high cost and exposed to excessive hazards because of the concentration of risks in a small area, occupied most of the field, it was probably politically unwise to authorize them to charge the rates which would have been necessary to cover all costs of operation. If corporations, whose volume of business is too small to be profit-

able even under favorable circumstances, are replaced by corporations with competent management operating over a sufficient territory to obtain some diversity of risks, the objections to charges commensurate with the cost of the service rendered cannot be sustained. Periodic examination of discount corporations by the Intermediate Credit Banks reveals any excessive charges and prevents exploitation of borrowers. If interest charges are kept so low that only highly selected credit risks can be accommodated, the credit mechanism set up to serve agriculture falls short of its possibilities and leaves a majority of producers dependent upon high-cost merchant credit.

Loans which the Federal Farm Board makes from its revolving fund introduce some disturbing elements into the agricultural credit situation. The duplication which occurs in capitalizing credit corporations has already been discussed. A similar duplication of effort occurs in furnishing marketing credit to cooperative associations. Cooperatives frequently complain that the advances of the Intermediate Credit Banks for marketing purposes are unnecessarily conservative, and they have also attempted to have the Agricultural Credits Act modified so as to authorize these banks to make advances in excess of 75 per cent of the market value of the crops pledged. Such proposals have been rejected; but since 1929 the Farm Board has used a portion of its revolving fund to supplement the commodity loans which cooperative associations obtain from either the Intermediate Credit Banks or commercial sources. These supplementary loans bring the total advances on commodities to 80 or 90 per cent and, although losses have not been reported, they have undoubtedly brought many loans above the amount that could be realized from the sale of the commodities.

The policy of making secondary advances on the same commodity is undesirable both from the point of view of the functioning of an agricultural banking system and because of its effect upon cooperative associations. If loans of 80 and 90 per cent of the market value of such commodities as wheat and cotton (which can be hedged in the futures market) are entirely safe, the Intermediate Credit Banks should be permitted to make larger advances rather than to authorize a second loan on the same commodity. If the supplementary loans of the Farm Board merely permit the Intermediate Credit Banks to make more conservative advances than they otherwise would be disposed to make, there is no justification for the duplication of services.

Probably a majority of these supplementary loans have been of a non-banking character for the purpose of enabling cooperatives to secure deliveries. But if the effect is to encourage cooperatives to borrow so freely as to place their sales policy in control of their creditors, such loans are undesirable from the point of view of the welfare of cooperative marketing. This is true even if the creditor is the Farm Board, whose purpose is to strengthen the cooperative movement.

Loans of a strictly promotional character which cannot meet conservative banking standards have no place in a permanent agricultural banking system. Advances of the Farm Board are largely of this type and consequently are not acceptable to banking institutions. Facility loans are long-term loans made on an amortized basis and are not eligible for either the Intermediate Credit Banks or the Federal Land Banks. Loans for effective merchandising are for the purpose of furnishing working capital, and cooperatives cannot ordinarily qualify for such loans from commercial banks and they have no collateral that is acceptable to the Intermediate Credit Banks. To the extent that these loans assist in establishing cooperatives on a sound business basis, they make it possible for the Intermediate Credit Banks or commercial banks to finance the other requirements of cooperatives more freely.

The further development of cooperative buying associations, which have been suggested as a medium through which certain borrowers might obtain production loans, will require loans for working capital and the Farm Board's revolving fund would seem the logical source for such funds.[3] Thus far the credit subsidiaries of two cooperative purchasing associations have managed to offer acceptable collateral to secure access to the Intermediate Credit Bank funds, but in general cooperative buying associations cannot obtain working capital to carry their inventories from the Intermediate Credit Banks. Nevertheless loans from the Farm Board's revolving fund should be confined strictly to fields not already provided for by existing credit agencies. If loans of a non-banking character are necessary to its program of reorganizing agriculture on a cooperative basis, they are properly made from a revolving fund set up for this specific purpose. The propriety of this objective is of course no part of the present discussion.

[3] The Farm Board is recommending that the Agricultural Marketing Act be amended to authorize loans to cooperative merchandising associations.

Measures for improving our rural credit facilities need not await the larger task of the reorganization of our commercial banking structure. The Intermediate Credit Banks, which form the basis of our agricultural credit system, have been conservatively managed. Although individual banks have experienced heavy losses, the credit of the system as a whole remains intact. Moreover, these banks have ready access to Federal Reserve Bank funds if the investment market is temporarily unreceptive to debenture offerings. But since Intermediate Credit Bank funds are available to producers only through the medium of properly capitalized financing institutions, it is obvious that effective utilization of the banks' services depends upon the creation of adequate local credit units and arrangements in respect to interest charges which will be sufficiently flexible to permit these local corporations to cover their costs of operation. The system must of course remain strictly aloof from any financing programs of a promotional or a semi-relief character that might endanger its credit.

SHORT-TERM BORROWING POLICIES OF FARMERS[1]

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There is a much quoted statement, sometimes credited to Shakespeare and sometimes to the Holy Bible, which says, "There is a time for sowing and a time for harvest." The writer's knowledge of the scriptures and the classics is insufficient to place the origin of this statement, but his observations on farm practices and the economic problems of farmers convince him of its truth as well as the truth of another statement suggested by it. This second statement is that "Someone usually has to finance the sower from sowing time until harvest."

No one has been clever enough to invent a system of farming that does not use short-term credit of some form. Dairy or poultry farming gives a more or less regular income throughout the year, but even with a successful dairy or poultry business there are times when the milk check or egg receipts will not cover current operating expenses that must be met at a particular time. Crop farming presents a still more difficult problem. Someone must invest money in seed and fertilizer in the spring and in labor throughout the growing season and then wait until fall or winter to cash in on the investment.

Among other things to which the agricultural depression has been attributed is credit. People are about equally divided as to whether agriculture has had too much or too little short-term credit. It would seem that in view of the fact that farmers have been at this game of agriculture ever since credit was calculated in terms of arrow heads and beaver skins that we have ample evidence that over a period of years farmers have been getting enough short-term credit to conduct their business. This does not prove, however, that they have been using the most efficient form of short-term credit.

Instead of making frequent apologies or explanations as he goes along in this paper of why he uses so many facts and figures from New York State, the writer is going to make a single explanation to cover all future occasions. During the major part of the last ten years he has been engaged in the farm management extension work of the New York State College of Agriculture, and a considerable proportion of his time has been devoted

[1] This paper was read at the Twenty-third Annual Meeting of the American Farm Economic Association, Cincinnati, Ohio, December 30, 1932.

to short-term credit problems of farmers. Having had no similar amount of experience in any other state, he will confine his discussion to New York State conditions. Let it be well understood, however, that he in no way feels that the credit problems of farmers are being handled in any more or less efficient manner in New York than in other states. It might also be stated that, while the writer's experience has been limited principally to one state, he has quite recently had an opportunity to visit nearly all of the state agricultural colleges and experiment stations in this country and to go over the research and extension work that they are doing in the field of agricultural credit.

Observation of credit problems in the different states of this country indicates that the short-term credit problems of the other 47 states are very similar to those of New York, i.e., someone has to finance the sower from sowing time to harvest, and not all farmers are using the most efficient form of short-term credit.

For a number of years, prior to 1922, numerous requests were made of the New York State College of Agriculture by farmers, bankers and rural merchants, to "do something about the credit situation." Feeling that no recommendations for improving conditions could be made until the facts were known, the Department of Agricultural Economics and Farm Management of the New York State College of Agriculture, made, during the summer of 1922, a study of short-term farm credit conditions. Information was obtained from the three groups of people most concerned: farmers, merchants, and bankers. The study was made with no idea of criticizing any of these three groups, but simply for the purpose of getting the facts.

Personal visits were first made to 107 farmers in Tioga County, which is a dairy county located in southern New York, and to a similar group of farmers in Genesee County, which is one of the best cash-crop counties in the western part. Complete records of the short-term credit operations for the preceding year also were obtained from practically every rural merchant doing business with farmers in these two counties.

A record was obtained from the farms included in this study of how all expenses for the previous year, both farm and personal, were met by each individual farmer. This study showed what part of the farm expenses were paid for in cash, what part was "put on the books," and the part covered by notes. In table 1 is shown how farm expenses were financed in 1922 in Tioga County.

TABLE 1.—HOW FARM EXPENSES WERE FINANCED ON 107 TIOGA COUNTY DAIRY FARMS IN NEW YORK—1922

	Per cent of annual outlay		
	Cash	Account	Note
Feed	17	77	6
Fertilizer, lime, seed	53	45	22
New machinery	51	14	35
Animals bought	63	3	34
Labor	95	5	—
Silo filling, threshing	69	31	—
Buildings	83	17	—
Fences, twine, etc.	92	8	—
Shoeing, repairs	82	18	—
Other farm expenses	89	11	—
New automobiles	70	3	27
Auto upkeep	98	2	—
Groceries	66	34	—
Clothing	99	1	—
Other personal expenses	92	8	—
Total expenses	67	27	6

In 1922 only 17 per cent of the feed purchased by Tioga County farmers was paid for in cash, and 77 per cent, or three-quarters of it, went on account. About one-half of the fertilizer, lime, and seed was paid for in cash and most of the balance represented merchant credit. Purchases of new machinery at that time were half cash and a third notes.

Considering all the expenses on these dairy farms in Tioga County, it is seen that 67 per cent, or about two-thirds of the purchases, were cash, and 27 per cent went on the books of some merchant or dealer. A similar study covering 102 farms in Genesee County, New York, showed that farmers in that section also were able to pay cash for about two-thirds of their annual purchases and expenses.

Turning now to the credit side of these farm businesses, the next question is who furnished the credit for that third of the expenses that was not paid for in cash. The answer to this question is shown in table 2.

There are three principal sources from which a person can get credit. One is from the person who sells the commodity, another is from an accommodating friend or relative, and a third is from agencies that specialize in credit, such as banks or other loan agencies.

TABLE 2.—SOURCES OF SHORT-TERM FARM CREDIT USED BY NEW YORK FARMERS—1922

	Per cent of total credit for year	
	Tioga County	Genesee County
Accounts (store credit)	73	49
Notes to others than banks	19	24
Banks	8	27

Ten years ago, in Tioga County, 73 per cent of the short-term credit used by farmers was store credit. The term, merchant or store credit, includes all purchases that went on the seller's books for a more or less length of time. In Genessee County 49 per cent of the short-term credit used by farmers was merchant credit. However, a large part of the credit used by the Genesee County farmers included in this study of 1922, represented very heavy bank borrowings of a few men for the purchase of feeder lambs and steers. Conditions in Tioga County, where three-quarters of the credit used by farmers was store credit, were more nearly representative of average conditions in the state at that time as evidenced by similar studies made in other sections. The important thing to notice in table 2 is that three-fourths of the credit used by New York dairy farmers was store credit, and only 8 per cent, or one-twelfth of it, was bank credit.

TABLE 3.—COST OF MERCHANT CREDIT IN NEW YORK—1922

Store group	Actual cost	Average term of credit (by months)	Cost on yearly basis
Feed stores	4.6%	4.1	13.4%
General stores	5.0	3.1	19.6
Hardware stores	7.6	6.2	14.7
Implement stores	6.0	6.8	10.6
Farm supply stores	5.9	5.4	13.2
Blacksmiths	5.7	3.1	21.8
Average	5.3	4.8	13.8

From information furnished by a large number of rural merchants and dealers, it was possible to find out just what it costs to extend short-term credit to farmers. In table 3 is shown the actual cost to feed stores, general stores, hardware stores, etc., of extending credit.

It is shown in table 3 that whenever the operator of a feed store put $100 worth of credit on his books, it cost him 4.6 per cent before he got his money back. The average feed store bill ran 4.1 months. Putting this on a yearly basis, it meant that it cost the average feed store 13.4 per cent, or $13.40, to carry $100 worth of farmer credit on the books for one year. The average feed store included in this study did a business of $55,000 a year, of which $33,000 was credit and $22,000 cash. The total cost of credit per store was $1507. Indirectly, of course, the farmers who bought the feed paid this $1507, since the dealer had to include it somewhere in his cost of doing business. Had all the business of these feed stores been cash, they could have sold all of their feed for nearly 3 per cent less. Since two-fifths of the business was cash, if we assessed all the credit costs against the

credit sales, there should have been a difference of about five per cent between cash and credit prices. Unfortunately, at the time this study was made, there were very few feed or farm-supply stores that made any difference between cash and credit prices. This meant there was no inducement for a farmer to pay cash for his feed and when he did pay cash, he was paying for a part of his neighbor's credit.

The average cost of merchant credit for all the different kinds of stores and agencies studied was 13.8 per cent per year. This meant that it was costing merchants and dealers nearly 14 per cent to carry $100 of short-term farmer credit for one year. In New York, and in most of the Northeastern States, short-term bank credit costs 6 per cent per year. However, in 1922 three-quarters of the credit used by farmers in New York State was of the expensive form of merchant credit and only 8 per cent, or about one-twelfth, was bank credit.

TABLE 4.—ITEMS OF COST OF STORE CREDIT IN NEW YORK—1922

	43 Feed stores	83 General stores	14 Implement stores
	%	%	%
Interest	6.0	6.0	6.0
Accounting	3.0	6.5	2.0
Supplies	0.6	1.1	0.3
Collection	1.1	1.4	0.6
Bad accounts	2.6	4.6	1.7
Total cost	13.4	19.6	10.6

The different items of cost of store credit which go to make up the 14 per cent that it cost to carry $100 worth of credit for a year are shown in table 4.

From time immemorial both buyers and sellers have been trying to get around the cold fact that when a merchant is asked to extend credit, he is subjected to certain unavoidable expenses which he must either absorb in his business or pass on to the purchaser. If a farmer buys a ton of feed or a mowing machine from a merchant and does not pay cash for it, we cannot get around the fact that the merchant has his money tied up and this usually means that he borrows from a bank and pays at least 6 per cent interest.

Another very human factor entering into short-term credit problems is that if a person gets credit from a merchant, the latter usually has to keep track of it, for it is human nature for the buyer or borrower to say, "I should worry, he will let me know when it is due or when he wants it." This cost of keeping track

of debts, or accounting costs, varied in New York from 2 per cent to 6.5 per cent for the different groups of stores studied. General stores had a very high cost of accounting because they had so many small sales. It costs just as much to enter a charge for a pound of nails on the books as for a ton of feed. Merchants who extended credit, also had to send out bills. This charge for supplies, which included stationery and stamps varied from 0.3 per cent to 1.1 per cent for different types of stores.

In the handling of short-term rural credit occasions arise when it is necessary for the creditor to round up some cash. In the agricultural credit studies referred to above, these costs of collection running all the way from charges for a few gallons of gas for some semi-social calls to lawyers' fees and court charges, varied from 0.6 per cent for implement stores to 1.1 per cent for feed stores for each $100 worth of credit carried for one year.

Farmers are no more or less honest than persons engaged in other businesses or professions. Studies made of the cost of extending credit by merchants dealing with city customers indicate that if a person extends a certain amount of credit to 100 farmers, 100 doctors, 100 college professors, or 100 clergymen, that there will be in each group about the same percentage of those who cannot or will not pay. Bad debts are one of the inevitable costs of credit, and in the case of the rural merchants included in the studies in New York, the item of bad accounts amounted to from 2 to nearly 5 per cent for the different types of business. One of the most undesirable practices in the handling of farm supplies is that frequently the cash customer pays the same price as the person who buys on credit. This means that the cash customer has to pay his share of the loss on the mowing machine bought by the man who got credit and left the community, taking the mowing machine with him but leaving his unpaid note behind.

It may seem very elementary to raise the question of why banks in the northeastern part of the United States can sell credit for six per cent while it costs the merchant from two to three times that amount. The answer to this is, of course, that one of the functions of a bank is to sell credit and because it is in that line of business it can handle it more efficiently than can a merchant. Banks usually do not have the large costs of collection and bad debts that merchants do. The writer never has heard of a bank staying in business very long that had a cost of 4.6 per cent for bad debts. Feed stores, implement dealers and fertilizer

dealers can sell commodities more efficiently than banks, but not credit. Studies of the business transactions of some of our larger and most efficiently operated farmers' purchasing organizations show that even under most efficient management, the farmers' cooperative association cannot extend credit as cheaply as can a bank.

The condition that existed in New York State in 1922 of farmers using merchants and dealers as their principal source of short-term credit was typical of conditions in many other states. A situation where three-fourths of the short-term credit operations of farmers are financed by merchants and dealers is bad for farmers, bankers, and merchants. In 1922 New York State farmers were buying approximately $75,000,000 worth of feed and fertilizer a year. The difference between 14 per cent interest and 6 per cent interest on that portion of the feed and fertilizer bill that went onto the books of merchants and dealers amounted to over $1,000,000 a year.

In discussing short-term agricultural policies of farmers, it seems very proper to raise the question of who was to blame for the condition that was costing over $1,000,000 annually. In the writer's opinion the three groups of persons involved in short-term credit transactions, bankers, merchants and farmers, were about equally to blame. Bankers could be blamed for not always recognizing farming as a business that is entitled to credit for productive purposes. Merchants could also be blamed for not giving more cash discounts or charging for credit, and for not making the man that used credit pay for it. The farmers can be blamed for not trying to get credit from the bank in a business-like way and for not looking for opportunities to save by paying cash.

In 1922 New York State, the same as many other states, was faced with the problem of improving the short-term agricultural credit situation. The approach to the problem was made along educational lines. The results of the credit studies referred to above were presented to farmers, bankers and merchants at meetings, in bulletins, in newspaper articles and over the radio. Numerous conferences of leading individuals in the fields of agriculture, banking and merchandizing were held at which the results of the credit studies were discussed and plans made for improving the situation.

As a result of farmers, bankers and merchants getting together, and getting at the real facts in the short-term credit

situation, and realizing that the furnishing of three-quarters of the short-term agricultural credit by merchants was bad for all concerned, some very specific recommendations were made. Some of these recommendations to farmers were:

1. Take an annual inventory and file a credit statement at a bank.
2. Talk plans over with your local banker.
3. Get in shape to pay cash and demand a discount.
4. When necessary to get short-term credit, consult your banker.
5. Be more prompt in caring for obligations.

Some of the recommendations made to bankers were:

1. Insist on a credit statement from every borrower.
2. Have someone in the bank who makes it his business to keep in touch with farm conditions.
3. Accept a farmer's credit statement instead of two-name paper, i.e., if the farmer's credit statement indicates that he is a good risk, let him have the money without asking for his neighbor's endorsement on his note.
4. Give discussions on the ways to improve the credit situation at schools and meetings of farmers' organizations and groups of merchants.

Recommendations made to merchants were:

1. Give cash discounts.
2. Sell goods and not credit.

Some practical problems, of course, arose in attempting to carry out these recommendations. For example, some farmers reported that it would not do them any good to get credit at the bank in order to pay cash because their local merchant or dealer gave no cash discounts. A number of solutions to this problem soon developed. With the rapid improvement of highways and the advent of the motor truck, the local dealer who did not give a cash discount soon found that his cash customers were going over into the next community where there was a store that did. Many times the cash dealer in the second community began delivering farm supplies to those customers in his competitor's territory who were in a position to pay cash. Cash stores that sold for less than the old-time merchants also appeared in many communities. These skimmed off the cream of the cash business, and left the old-time merchant holding the sack with the credit business. Mail order houses also began taking their share of the cash business from persons who could get no cash discount at home but realized that they had been paying a part of their neighbor's credit. About this time, several of our largest farmers' purchasing organizations adopted the policy of giving cash discounts or charging for credit. All of these factors forced many

of the old-time merchants to wake up to the fact that they must begin to think about offering cash discounts. Many of those who did not wake up are not in business now.

The recommendations that a bank require credit statements from all borrowers also brought up some practical problems. Bankers had not been in the habit of asking for credit statements from farmers and farmers had not been in the habit of filing them. When the idea of a farmer filing a credit statement at his bank was first suggested in New York State, many bankers hesitated to ask a farmer for a statement for fear of offending him and some farmers who were asked for statements did take their business elsewhere or did not patronize any bank.

About ten years ago a definite educational campaign directed towards encouraging the taking of farm inventories and filing credit statements was started by the Agricultural Extension Service in New York State in cooperation with the State Bankers' Association, the Grange and several farmers' cooperative buying and selling associations.

The strongest argument for filing a credit statement that could be presented to the farmer was "The banker is likely to know what you owe, but does not know what you own, unless you take an inventory and file a credit statement." For the last five or six years in New York State, as well as in several other states in the country, the first week in January has been designated as "Farm Inventory Week" and a definite farm inventory and credit statement campaign has been scheduled each year. One of the best indications that the taking of an annual inventory and the filing of a credit statement at a bank has come to be generally regarded by farmers as a good business practice is the fact that at its annual meeting in Syracuse in 1929, the New York State Farm Bureau Federation went on record as not only urging all farmers to take an annual inventory and file a credit statement, but also as urging that all bankers require a credit statement from every farmer borrower.

It was a most fortunate incident for New York State farmers that soon after the credit studies referred to in this discussion were made, the New York State Bankers' Association appointed a very active and enthusiastic agricultural committee. This committee turned to the College of Agriculture with the question, "What can we do for agriculture?" and were told that one thing that was needed was a practical farm credit statement to take the place of the cumbersome and useless one that the Fed-

eral Reserve Bank of New York was then attempting to get the member banks to use.

At a conference of the agricultural committee of the state bankers' association, and representatives of other agricultural interests of the state, a credit statement that had been included for a number of years in the farm inventory books of the College Extension Service was revised to meet modern banking methods and adopted as the official credit statement of the New York State Bankers' Association. The Federal Reserve Bank of New York later asked permission to adopt this as its official farm credit statement.

One of the problems that rural merchants met in attempting to follow the recommendations for giving cash discounts was that frequently they had three groups of persons with whom to deal. One group was in position to pay cash when they got their feed or fertilizer. Another paid cash when they got their milk check or egg receipts, and a third paid for their feed or fertilizer sometime in the future—or at least said they would. The result was that many merchants who started in offering a three per cent cash discount would have a customer come in and inquire about the price of feed and would ask the dealer to hold a ton until the fifteenth of the month when the milk checks would be coming through.

The dealer, being a good fellow and the farmer having his truck or wagon right there at the time, frequently suggested that the farmer might as well take the feed home with him and save a trip. Then when the milk check did come, the farmer came around and asked if he could not pay for half of his bill out of that check and the balance from the next one. The result was that many merchants soon found themselves giving cash discounts on commodities sold on thirty days credit.

This situation indicated the need for two different kinds of cash discounts, one for transactions where the cash is actually paid for the commodities when they are moved and another for settlement in 10, 15 or 30 days.

One of the factors entering into an attempt to make the person who uses credit pay for it is the human tendency to prefer a reward to a penalty. The average buyer feels much happier when he is told that the price of a certain article is $10, but that there is an opportunity to get a three or five per cent cash discount than he is if told that the article is $9.50, and if he does not pay cash he will be charged an additional half dollar. There are apparent-

ly two very satisfactory ways of handling cash discounts for farm supplies, used by the more successful and progressive merchants and cooperatives. One of these involves the quoting of the "long" price to the consumer with the statement that there is a certain discount, usually varying from three to five per cent, for spot cash and a smaller discount for cash in thirty days.

The other plan involves both the reward and penalty features. In this plan the seller quotes the price that he would normally charge if the account were settled in thirty days and then offers a discount if paid within thirty days and also charges interest on all accounts that run beyond that time. Both of these methods of handling credit mean that the person who uses credit pays for it rather than the cash customer paying for a part of his neighbor's credit.

For some time after the first credit studies were made in New York and other states, there was little change in the short-term credit situation. The results of the credit studies discussed above were not disputed, but there was a great amount of inertia to be overcome in bringing about the introduction of cash discounts, farm credit statements, and other needed changes.

In 1931, nine years after the first credit study was made in New York, a second study was undertaken to again "find out the facts."

The results of this later study showed that there had indeed been a change in the short-term credit situation. In table 5 is shown how expenditures were financed in 1931 on 457 New York farms in the areas covered in the earlier 1922 study.

At the present time, over four-fifths of the farm expenses in these areas are covered by cash, as compared with about two-thirds nine years ago.

The most striking difference in the proportion of the farm expenses that were paid for by cash was in Tioga County, the dairy section included in the 1922 study. In 1922 only 17 per cent of the feed purchased in this county was paid for in cash, while 59 per cent of this expense was cash in 1931. The actual difference between the per cent of feed paid for in cash in this county in 1922 and in 1931 may possibly not be quite as great as these studies indicate, since a somewhat larger per cent of the farms studied in 1931 were valley farms than in 1922, and for this reason might represent a little more progressive and prosperous group of farmers. However, the study clearly indicates that from two to three times as much of the feed pur-

TABLE 5.—HOW FARM EXPENSES WERE FINANCED ON 457 NEW YORK FARMS—1930-1931

Expenditure	*Per cent annual outlay*		
	Cash	Account	Note
Feed	63	36	1
Fertilizer, lime, seed	59	40	1
New machinery	57	12	31
Animals bought	79	4	17
Labor	99	1	0
Silo, baling, threshing	70	30	0
New buildings & building repair	77	15	8
Fencing and twine	83	16	1
Shoeing, machinery repairs	88	12	0
Other farm expense	77	23	0
New auto	71	15	14
Auto upkeep	93	7	0
Groceries	88	12	0
Clothing	98	2	0
Other personal expense	96	4	0
All expenditures	81	16	3

chased by New York dairymen is now paid for in cash as formerly. The 1931 study also indicated that there had been a decrease in the per cent of the total short-term credit used that was obtained from merchants and a corresponding increase in bank credit. In 1922 only 8 per cent of the short-term credit used by dairy farmers was furnished by banks, while in 1931 banks were supplying 16.6 per cent of this form of credit in the dairy areas covered by the credit study. Banks were supplying 21.8 per cent of the short-term credit used by farmers in all of the different areas included in the 1930-31 study. (Table 6)

Another important change that has occurred in the relation between farmers and bankers is that while in 1922 only a little over half the farmers in the dairy section had checking accounts at banks, over two-thirds of them had checking accounts nine years later. There was also a still greater increase in the number of farmers who were maintaining interest accounts at banks, and a decrease of about a third in the number of farmers who had no bank accounts of any kind.

With the drastic decline that has occurred in the general price level in the past three years, the interest rates that the purchaser is paying when he does not take advantage of cash dis-

TABLE 6.—SOURCES AND AMOUNTS OF NEW SHORT-TERM CREDIT GRANTED TO 457 NEW YORK FARMERS DURING THE YEAR JULY, 1930-1931

	Per cent of total amount
On account	67.7
Notes to others than banks	10.5
Notes to banks	21.8
All sources	100.00

counts have increased, since many of the discounts given by merchants on feed and fertilizer were a flat rate per hundred or per ton, and these rates have been maintained even though the price per hundred or per ton has declined. An example of this is the fact that when dairy feeds were selling for $40 to $50 a ton, many merchants were giving a cash discount of $1 a ton, and with feed prices now approximately half that amount, the same $1 per ton discount is available. In 1931 New York farmers reported that by paying cash they could save an average of 5.1 per cent on the purchase price of feed; 7.5 per cent on fertilizer, and an average of 7.2 per cent on farm machinery. Since the average bill for these commodities runs only a part of the year, this again means that a person who does not pay cash for these items is paying from 15 to 25 per cent interest for merchant credit.

Although the 1931 credit study showed that there had been a big shift from credit to cash buying among farmers, it also indicated that a large per cent of the short-term credit that farmers are now using is still furnished by merchants. This means the need for more educational work.

The most striking and certainly, in so far as those who have been recommending that farmers take an annual farm inventory and file a credit statement was concerned, the most gratifying fact brought to light in the 1931 New York credit study was the number of farmers who are filing credit statements at banks. For a number of years the College Extension Service had received requests annually for over 20,000 copies of its farm inventory and credit statement book, but there had never been any very reliable statistical evidence as to the number of credit statements that were actually filed at banks. The 1931 study, which covered nearly 500 farms in very representative areas of the state, showed that 12 per cent of the farmers had actually filed credit statements at their banks during that particular year. Based on the number of actively operated farms in the State, this means that over 20,000 New York State farmers are keeping their farms on a business basis by annually filing credit statements at their banks.

In times like these, when there have been a large number of bank failures in different parts of the country, and when banks of necessity are required to keep more than the usual percentage of their assets in liquid form, the opportunities for farmers to get bank credit naturally are curtailed. However, from a standpoint of the survival of the fittest, the farmer who is the best

business man and who is considered the best risk is likely to be the one who will be able to obtain bank credit. This means that any advantage that has been present in previous years in a farmer's taking an annual inventory and filing a credit statement with his bank is now increased. The filing of a credit statement does not guarantee that a farmer will get short-term credit from his bank, but it does mean that his chances are a whole lot better than if the banker has to guess at his financial condition.

Another factor that is appearing in the present short-term agricultural situation is that many farmers are insolvent. Some of these are permanently insolvent and some of them will be able to pay their debts. It is good business for bankers and merchants to help the farmer who will eventually be solvent to operate his farm on the most economical basis possible. In many cases the best chance that banks or merchants have of getting back what a farmer now owes them is to help him carry on for another year. This again means the need for absolute frankness and business-like methods on the part of the farmer in doing business with the bank. The more debts that a farmer has, the more important that he figure up just what they are and file a credit statement with his bank. It is much better for the farmer to have the banker know all the debts which the farmer has and to know that he knows all of them, than for him to hear about some of them indirectly and wonder just how many more there are in existence.

To summarize briefly this discussion of short-term borrowing policies of farmers:

1. Agriculture has always used and always will use short-term credit.
2. Banking institutions can furnish short-term credit to farmers at less cost than merchants.
3. Banks cannot advertise to furnish unlimited credit, but many farmers using merchant credit could obtain bank credit if they went after it in a business-like way by taking an annual inventory and filing a credit statement.
4. The fact that a large percentage of our short-term agricultural credit is furnished by merchants and dealers is bad for bankers, farmers, and merchants.
5. Some of the steps that farmers can take to improve the present short-term agricultural credit situation are:
   a. Take an annual inventory and file a credit statement at the bank.
   b. Talk plans over with the banker.
   c. Try to get in shape to pay cash and demand a cash discount.
   d. When it is necessary to get short-term credit, go to the bank first.
   e. Be more prompt in caring for obligations.

6. Some of the things which bankers can do to improve the short-term agricultural credit situation are:
   a. Demand a credit statement from every farmer borrower.
   b. Have some one in the bank who makes it a business to keep in touch with agricultural conditions.
   c. If a farmer's credit statement indicates that he is a good risk, let him have the loan on the strength of his credit statement and his wife's endorsement rather than asking him to get a neighbor to endorse his note.
   d. Continue educational work on ways of improving the credit situation.
7. Some things which merchants can do to improve the situation are:
   a. Give cash discounts.
   b. Sell goods and not credit.

The only difference that the writer can see that the present economic situation makes in the short-term borrowing policies of farmers is that all of the practices which agricultural credit studies made in previous years have indicated to be good business on the part of farmers, merchants and bankers are much better business now than ever before. In the terms of either the prophet or the poet, "There is a time for sowing and a time for harvest," and "Someone must finance the sower from sowing time to harvest." The short-term agricultural credit problem is to get that financing done in as efficient a way as possible.

Discussion by L. J. Norton

University of Illinois

I have been asked to discuss Mr. Hart's and Miss Baird's papers. With Mr. Hart's propositions I am in general agreement. To summarize them they are: (1) Bank credit is cheaper than merchant credit; therefore, farmers should use bank credit if they cannot pay cash; in New York State surveys show an increased use.

(2) It costs merchants money to extend credit; therefore they should give discounts for cash; under the stimulus of competition of state-wide cooperatives New York State merchants are doing this to an increasing extent.

(3) Credit statements assist in getting bank credit; farm inventory records make it easier to prepare satisfactory credit statements; therefore farmers should keep inventory records.

In connection with this latter point it is worth noting that in Illinois, where the farm management extension work has not emphasized inventory keeping except as a part of the farm account work, there is now the same widespread use of credit statements which Mr. Hart reports for New York State. Replies to the questionnaire sent to about 1,000 farmers in Illinois in September, 1932, indicated that 58 per cent of them were required to file financial statements with their bank as a preliminary to borrowing. Another questionnaire sent to all bankers in the state leads

to the same conclusion. Ten per cent of the replying banks stated that credit statements were required of all borrowing farmers; and about 45 per cent indicated that they were required for all loans to farmers of over $500. The percentage of all their borrowing customers required to file statements averaged 54 per cent, which checks closely with the replies from farmers.

It is what Mr. Hart left out rather than what he included on which I wish to comment. The inference of his remarks is that there is no problem in connection with the securing of short-term funds faced by farmers. The truth of this assumption may be seriously questioned in New York State. At least, in Illinois if you advise farmers to use bank credit, their answer would likely be: "Bank! Bank! Who's got a bank?" This is perhaps an overstatement. The opinion of farmers on this point, as gleaned from the questionnaire referred to above, may be of some interest. Understand, these replies came from a hand-picked group, who probably have above the average credit ratings. The question we asked was: Is bank credit available to persons with good credit ratings and good security in your community for certain specific purposes? The answers were as follows:

For general operating purposes, reported as available by 67% of replies.
For purchase of feeder cattle, reported as available by 56% of replies.
For storage of grain reported as available by 42% of replies.

This was in September before the full impact of 12 cent corn and 3 cent hogs had been felt on financial conditions.

Another evidence of shortage of bank credit in our state is the increasing use by farmers of the facilities of small-loan companies which under our law are permitted to make loans up to $300 at the rate of 3½ per cent per month. We have collected data which show a large and increasing use of these agencies by farmers particularly in the sections of higher priced land. Between merchant credit and small-loan company credit, merchant credit as it is understood in the northern states is certainly preferable.

No! I do not think that referring farmers to the banks for credit is an adequate treatment of the short-term credit problem. There are a least two rural counties in Illinois which have no active banks and many other communities which have lost their banks and also not a few where banks may be more accurately described as refrigerators than as providers of short-term credit.

The only real solution of the short-term credit problem is a rise in prices of farm products which will increase bank funds and liquidate the large mass of slow and frozen paper. Heat applied in the form of higher prices is the greatest need of our rural credit mechanism.

Miss Baird attaches more weight than I do to the likelihood of relief through new types of agencies, although I am not sufficiently familiar with conditions in the South and West to appraise the situation there. The greatest short-term needs for credit in Illinois are:

(1) Borrowing for interest and taxes. The local banks properly refuse to lend for these purposes under present conditions unless the borrower has specific security such as some produce which is not yet ready for

market. Banks have too many difficulties from loans which were originally acquired in this manner.

(2) Feeder cattle and lamb loans. These are being taken care of quite adequately, in view of the uncertainty of the cattle situation, by local bank funds, by an expansion in use of intermediate credit funds, and by a large development of contract feeding, the financing of which is done by the original producer or his banker.

(3) Crop production loans with which there is serious difficulty in connection with some specialized crop section. Where there are large cash outlays as in connection with seed for potato production, it seems to me that some form of crop production loan by the Federal government must be used, but in general farming sections the wiser procedure is to take care of the situation by increasing use of home financing—the cream check and egg sales.

(4) Small emergency loans to take care of personal emergencies. In connection with these there is a field for the development of credit unions. Rural credit unions have not developed in Illinois as they have begun to develop in Indiana. Developments in Indiana should be watched with interest by all students of farm credit.

(5) Grain storage loans. In 1931 a corn credit storage corporation was developed in Illinois and Iowa. Because of the decline in the corn market and the unfortunate outcome of storage operations, there seems to be no interest in this in Illinois during the current year. Enough corn is being sold to meet pressing financial needs even at current low prices, and the large mortgage agencies do not seem to be disposed to force sale of corn for the present market to meet interest payments. What the situation will be next March when a large volume of payments are due, is another question. It probably would not be difficult to begin active lending again through the corn credit corporation if demand should arise.

Concerning agricultural credit corporations, I feel that the most satisfactory types for our conditions are:

(1) Subsidiary of a local bank to take care of emergency and seasonal needs. We have some excellent examples of such subsidiaries.

(2) An affiliate of a livestock selling organization, either cooperative or private.

(3) An independent corporation of adequate size. We have one of these which specialized in dairy cattle paper in the Chicago dairy district and is now actively working into feeder loans.

The limiting factor is shortage of capital to capitalize these corporations. There is little disposition to borrow capital from federal sources. These opportunities might well be withdrawn. The developments which are taking place in Illinois are in the direction of providing more adequate facilities for financing the livestock industry.

Crop loans are not being taken care of in this way. It does not seem to me that we can expect the financing of crop production to become a permanent function of the national government, although under the present emergency it probably will have to be so considered. Not all of the farmers who need such credit are marginal, although there is no question that a considerable part of the government crops loans in the last two years should be classified as relief rather than banking transactions.

With Miss Baird's conclusions that we need a permanent system of discount corporation to connect producers with intermediate bank funds and that higher interest rates must be charged in the higher risk part of these loans, I also agree. The policy of the government in making crop loans at low rates for hazardous purposes as followed in the last two years is ridiculous from a credit standpoint. I do not have the same vision of the possibilities of the corporations being set up by the Reconstruction Finance Corporation as she indicates, however. We need responsible local institutions if credits are to be wisely extended. One remote control through the Intermediate Credit Bank is enough. The problem of adequate volume can better be solved by linking with other types of local institutions as noted above. I doubt whether our farmers would be willing to assume responsibility for their neighbors' loans up to 10 per cent of their own loan, as Miss Baird suggests, to provide local contacts. This might work in sections where farmers are used to borrowing at 7 per cent or less.

A practical difficulty with making crop loans through cooperative supply companies is the lack of the latter on any comprehensive scale. One advantage is that it might discourage improper use of such funds, although there is said to be a bootlegger in southern Illinois who has acquired a truck load of Red Cross flour by barter transactions.

In conclusion, Miss Baird has made a substantial contribution to the subject of the credit situation. My main criticism of her suggestions is the emphasis on building up of another system of remote control credit agencies and the practical limitations of her suggestion for mutual guarantee of losses by local groups. In these times most farmers have enough worry about their own losses without being very much interested in underwriting the credit of their neighbors.

MEASURING THE EFFECT OF SUPPLIES ON PRICES OF FARM PRODUCTS[1]

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Introduction

In spite of the numerous studies that are now available, in published and unpublished form, dealing with supply and price relationships for farm prroducts, the field is still largely uncultivated. Practically all of the important problems in price behavior need either further investigation or re-investigation. If one attempts to bring together the various studies to glean quantitative light on such basic questions as the relation of the size of crops to their values, the relation of production-price curves to demand or consumption-price schedules, shifts in demand schedules, changes in the slope or elasticity of demand schedules, the effect of local production on local prices, the effects on prices due to prices of competing and complementary products, the effect of farm production on consumer expenditures for farm products, the effects of farm production on the relation between agricultural and nonagricultural prices in general—one is confronted by numerous difficulties and qualifications that leave these questions unanswered.

These difficulties arise in part from the lack of data on consumption, prices paid by consumers and consumer incomes—a condition which is chiefly responsible for the development of the many supply and price relations instead of consumption-price relations. In part, they are also due to the mixed purposes for which the various studies were intended. Some were intended merely to demonstrate technique, others were aimed more directly at determining supply influences, and still others were developed largely for forecasting purposes without reference to the specific or direct causes of price fluctuations. Much confusion also exists in the available results due to relating supplies to prices without sufficient regard to logic and consistency. There are thus studies where consumption is related to wholesale prices instead of to retail prices; farm production related to wholesale or retail prices instead of to farm prices; national production related to local prices, instead of to prices for the country as a whole; production and carry-over treated in relation to price, without recog-

[1] Paper read at annual meeting of American Farm Economic Association, Cincinnati, Ohio, December 30, 1932.

nizing that producers do not as a rule, control both portions of total supply or that at times changes in the carry-over are merely indications of changes in demand conditions.

Other difficulties in the usefulness of existing price studies arise from the fact that investigators were in a number of instances carried away by the newly acquired ability to compute coefficients of correlation, by the glamour of a particular formula in curve fitting leading investigators to apply that one formula in a wholesale fashion. Methods of pioneers in the field, presumably successful, have in some cases led to indiscriminate imitation, without regard to the fact that the pioneers were gradually growing in knowledge and wisdom and were developing more satisfactory technique. The usefulness of the available studies, from the standpoint of comparability, is also hampered by the lack of uniformity, growing out of individual preferences with regard to measures of price level, business activity and other general factors included in the analyses. And now still another problem has arisen in that most of the basic data on production and supplies have recently been so altered through official revisions as to make necessary the re-working of practically all available price studies. Where the supply data have not been revised, data bearing on other factors, such as measures of price levels, business activity, employment and consumer incomes, have been altered.

The price analysts of the next decade will be in a much better position to develop satisfactory answers to price problems, for they will have at their command not only more adequate data, but also the experience that has been gleaned during the past decade. Furthermore, the output in this field of research is likely to be even greater than that of the past few years, for while there may not be an immediate prospect of additional funds or personnel for carrying on price analysis, the productivity of the individual investigator should show a great increase. The newer correlation tools now available do away with most of the tedious and dubious mechanics. They should in fact lead not only to greater output but to a keener understanding on the part of the investigator of his particular problem. The task of those who will undertake to revise the studies already published will be much lighter than that of the original investigators.

Judging from present tendencies, it appears reasonable to expect more work to be done on changes in demand conditions responsible for shifts in demand schedules and for changes in their slope. This will necessarily call first for clarifying the relations

between production or total supply and price curves, and consumption-price relations. It will then require more intensive research on consumer incomes, their disposition, their influences on the demand for the various agricultural as well as nonagricultural items in the consumer's budget. Out of these efforts we are bound to have a clearer and more intimate understanding of the various factors in the commodity markets, and of the influences on prices which arise from the various portions of total supplies, (whether actual or potential, whether on farms, in storage, in consuming channels, in the domestic or foreign markets, or in the hands of government agencies.) The emphasis in price analyses is likely to be on the details of market operations and on the real causal forces in price movements in contrast with the past efforts to find concurrent relations. The stressing of demand changes will probably lead to greater efforts toward measuring and forecasting business conditions, changes in consumer demand, and changes in conditions affecting price levels in general, just as the recognition during the relatively prosperous period of 1923-1929 of the importance of changes in supply as a factor in farm prices led to the development of additional methods of forecasting changes in supplies.

The specific purpose of this paper, however, is not so much to dwell on the shortcomings of past price analyses, nor to summarize the results of studies that, to my mind, need complete revision for comparability and usefulness, but rather to illustrate some of the specific problems which seem likely to receive greater emphasis than they have in the past. These illustrations, taken from unpublished studies of the present writer, it is hoped, will stimulate the efforts of others along the lines indicated. They are, of course, of primary interest to present and prospective price analysts, but they contain certain facts that may be of more general interest. The time limitations on this paper do not permit a detailed discussion of the methods,[2] assumptions, and implications involved in the several examples. It is assumed that the reader is sufficiently interested in price analysis procedure to peruse in detail the graphic illustrations which form the body of this paper. It is not desired that the results shown here be taken as final, but rather as suggestive, and for that reason the reader will find in practically all of the examples the basic data as well as the final relationships, should he be interested in re-

[2] The simplified method used in all of the analyses contained in this paper is described in two papers on the simplified method of graphic correlation by the present writer in the December, 1929, and 1930 issues of the *Journal of the American Statistical Association.*

working the problems and in improving the results. The writer will, therefore, limit himself to some general observations and to the outstanding conclusions that may be derived from the illustrations.

Summary

The first example deals with a simple problem in determining the shifts and changes in slope of a production price curve, the most common type of relation found in price analysis literature. It is shown here that this relation may be a variable one from period to period, and that in determining its characteristic slope it is unsafe to assume constant or uniform influences of other factors, such as the general price level, or population growth or other general changes in demand. A given change in the general price level may have twice the influence in one period as compared with that of another.

The second example is an attempt to show how the relation between total production or between total supply and price may be considered as a general demand curve in the sense of a summation of several component demand curves, and also how from these component demand curves one may approximate the so-called instantaneous supply curve of the producer and the demand curve of the dealer or consumer. This suggests a method of reconciling, for commodities of relatively simple markets, the production-price approach of the statistician with the supply and demand approach of the economist.

The third illustration presents sample supply and price relations, for three widely different commodities, potatoes, a perishable product disposed of in the domestic markets; wheat, an international food product, predominantly subject to supply influences abroad; and cotton, an international industrial commodity subject predominantly to changes in industrial conditions in the United States and abroad. There are shown for potatoes three different supply and price relations, using production retained by producers, sales, and total production, the first being the most elastic. For wheat there are shown supply and price relations, using domestic and world supplies, and also world disappearance and world carry-over-price relations, the latter apparently the most elastic of the four and the world consumption-price relation the most inelastic. In each, price series were used that seemed appropriate.

In the case of cotton, there are shown two supply and price relations that differ markedly. One is based on total supply for

the entire season (crop and carry-over) and the other is based on an average supply during the course of the season in which changes in demand conditions are automatically allowed for. The latter relation is sufficiently elastic so that large supplies have nearly the same value as small ones. It emphasizes the importances of variations in consumption and other demand factors in determining the values of large or small crops.

The fourth example deals with some of the problems involved in determining the effect of consumption on retail prices (of pork) when changes in consumer purchasing power as well as changes in the price of a competing commodity (beef) are taken into account. In this connection, there is presented a new measure of the money incomes of nonagricultural consumers which differs from the commonly used index of factory wage payments, in that it covers a much larger proportion of the national flow of money income. (Incidentally it suggests that the national income of about $91,000,000,000 in 1929 was still about $55,000,000,000 in 1932, compared with the much lower figures that are now being circulated.) With income unchanged, consumers tend to spend about the same amount irrespective of volume of consumption, indicating unit elasticity, and they tend to spend a somewhat smaller percentage of income in years of prosperity, such as 1929, than in years of depression, such as 1932 and 1921. It is also shown here that in spite of the high inter-correlation between beef and pork prices and consumer incomes, it is possible to approximate the separate influences of consumer incomes and of the price of the competing commodity.

A fifth illustration is an analysis of the gross relation between total farm output to farm prices, in which it is shown that in the post-war years gross farm income varied directly with the income of nonagricultural consumers, indicative of unit elasticity for the aggregate of individual commodities, some of which have a greater and others a smaller elasticity than unity. It may be deduced from this, bearing in mind that only about three-fourths of the yearly farm output is consumed domestically, though at higher than farm prices, that consumers en masse with incomes unchanged tend to spend about the same amount for their consumption of agricultural origin and that, therefore, farmers as a group might not realize a larger gross income if they curtailed their total output, but might get a somewhat larger net income insofar as a smaller volume might reduce some of the variable production and marketing costs.

In the fifth example, an attempt is made to show that the production-price relations generally revealed for farm products also show up in nonagricultural price analysis, such as silk, iron and steel, provided the same reasonable methods are employed. Both agricultural and nonagricultural groups of commodities respond to supplies in the same general manner except that in industrial production there is an almost immediate response of supplies to prices which has made price analysis in this field more difficult. It also appears that for industrial products as a group, the production-price relation is about twice as elastic as that for all farm products combined.

The final illustration emphasizes the role of variations in supply in the commodity-price system, particularly as reflected in the margins between prices of any two individual competing commodities (such as pork and beef) and between any two major groups of commodities which compete in the consumers' budget such as agricultural and non agricultural products. The general disparities between agricultural and nonagricultural prices which tend to develop during business and general price depressions are due in large measure to maladjustments in relative supplies created by the inability of farmers to curtail output drastically. Low prices of agricultural products in relation to industrial products are the counterpart of the relatively stable, and therefore relative over-supply of farm products in relation to the greatly curtailed output of industrial products. Since farmers can not and should not, from the standpoint of national welfare, shut off production as do nonagricultural enterprises, it follows that under the usual slow processes of revival, the disappearance of agricultural price disparities depends to a large extent upon a restoration of industrial production.

Example I. Measuring Changes in Slope and Level of Supply and Price Curves

The problem of establishing relations between supply and prices received by farmers is complicated by (a) changes in the general level of prices, (b) fluctuations in consumer incomes and (c) changes in demand due to population changing in number and composition. The factors (a) and (b) cause vertical and (c) horizontal shifts in the supply and price curves. A further complication is the change in the slope or in elasticity caused by shifts in the centers of production in relation to consuming areas, by changes in transportation and other costs between producer and

consumer, and by consuming habits or by actual changes in the consumer demand schedule. In a recent paper before this Association the shifts in the level of production-price curves of major farm products were represented by a three-dimensional device.[3] A simpler presentation of results more simply derived is offered in Figure 1. For five important periods there are shown (a) the relations between production and price, and the shifting of each of the five curves due to (b) changes in the level of food prices and (c) other forces associated with the passage of time.

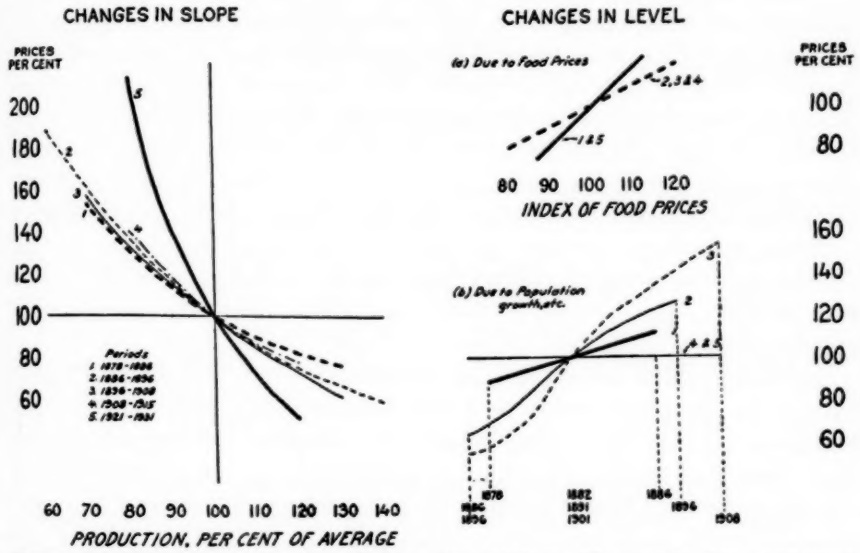

FIGURE 1.—Production and price relations for potatoes: Changes in slope and level.

Apparently a great change took place in the elasticity of the production-price relation of potatoes, after 1920, the change in price for a given change in supply, say 10 per cent, being at least twice as great as in the pre-war periods.

Changes in the level of the production-price relation are here shown to have been caused by the rise and fall of the general level of prices as reflected in food prices. In the published studies dealing with the influences of the general price level, no attempt has as yet been made to show the varying influence of this factor. In Figure 1 it appears that in some periods the effect of a given rise or fall in the general level on prices received by growers was about twice as great as in others. The apparent growth in de-

[3] See this Journal, April, 1932, The Shifting Demand for Selected Agricultural Commodities, by H. Schultz.

mand, due to population growth and other reasons, has also varied from period to period, causing prices for the crops of the same size to rise faster in some periods than in others. There was no apparent growth in demand during the past generation. The causes of shifts and changes in demand schedules such as are here indicated are yet to be fully investigated.

Example II. A Method for Developing "Instantaneous" Supply and Demand Curves for Annual Crops

The availability of production and supply data and the meager data on consumption and retail prices have tended to promote production-price studies and to retard the development of consumer demand schedules. Some have argued that production-price curves are not the instantaneous demand curves of consumers which, in conjunction with the instantaneous supply curves of producers, indicate price determination at the intersecting point of equilibrium. It has also been pointed out theoretically that the relations between production or supply and price represent general demand curves, that is, the summation of all types of demand, of producers, dealers, consumers, exporters and speculators.

We may again resort to the potato crop as offering an illustration in simplest form that the total supply and price curve is a general demand curve of several demand components, and that from these components it is possible to approximate the instantaneous supply and demand curves which determine the season's level of prices for an annual perishable crop involving no carry-over problem.

In Figure 2 are illustrated first (a) the farm demand for potatoes, represented by the yearly amounts retained by growers for various purposes, more being retained in years of low prices and less in years of high prices, (b) the dealer (and presumably the consumer) demand curve represented by the quantities sold at farm prices and (c) the total farm and dealer demand, represented by total quantities produced at farm prices. These data make possible two views of price determination. With demand and general price level conditions unchanged, the total or general demand curve indicates the price that has tended to prevail for a given crop (see in the illustration, lower half, a crop of 325,000,000 bushels intersecting the total demand curve as derived above.) In illustrating the second view of price determination, we make use of the farmer's reservation or demand curve to indicate what amounts out of a given crop (325,000,000 bushels)

farmers tend to offer to dealers. Thus by deducting from a given crop the amounts farmers tend to hold at different price levels there is indicated the farmer's supply schedule. The point at which this supply schedule intersects the dealer demand schedule represents the yearly price for the crop, and this price is identical with the price indicated by the size of the crop and the

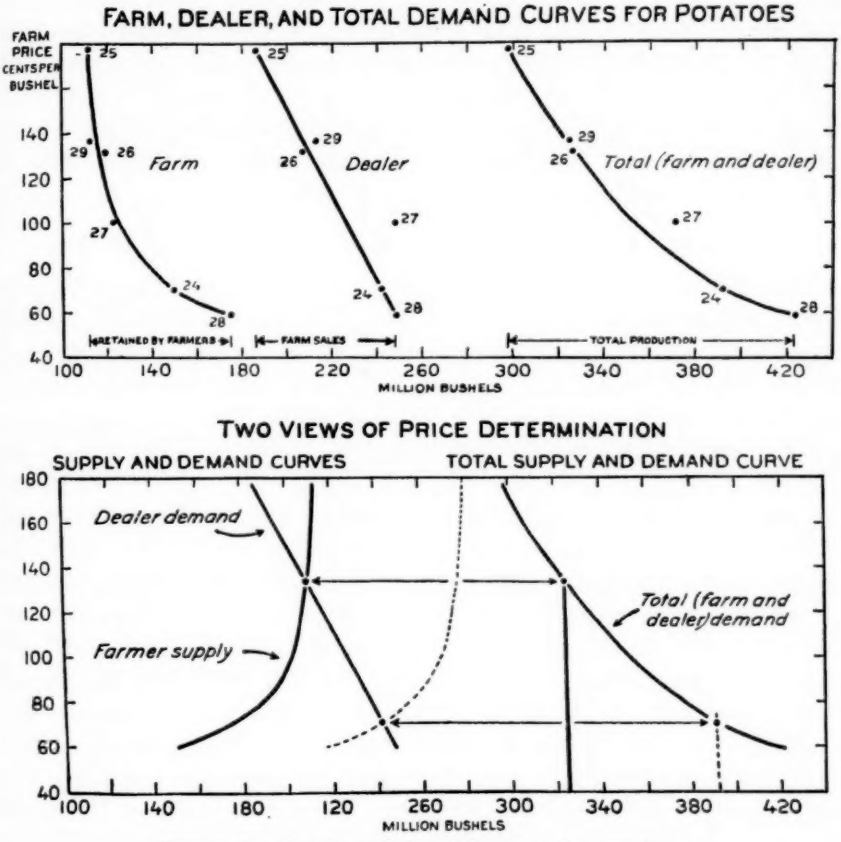

FIGURE 2.—Supply and demand curves for potatoes.

general demand schedule. With demand conditions unchanged a larger crop means a shifting of the supply schedule to the right and therefore an intersection at a lower price level.

This method of harmonizing the views of price determination by a general demand schedule and by supply and demand schedules has already been demonstrated for the cotton crop.[4] For that commodity the general demand schedule includes the spec-

[4] See *Quarterly Journal of Economics*, February 1928, M. Ezekiel, Statistical Analyses and the Laws of Price.

ulator's reservation demand in the form of quantities carried over from one season to the next, and in as much as cotton farmers tend to sell their entire crop irrespective of price, they have no reservation demand, and price may be represented as determined by (a) the demand schedule of mills and other consumers, and (b) the supply schedule of speculators, dealers and others who take over the crop from the grower and either release for consumption or retain for carry-over. These illustrations suggest the possibility of harmonizing price analysis procedure with the behavior of the markets according to economic theory. Efforts along these lines embracing the commodities of more complex markets and making use of appropriate modifications of the above examples should prove fruitful.

Example III. Types of Supply and Price Relations

Several supply and price relations are possible depending on the commodity and the purpose in mind. For annual perishable crops such as fruits and vegetables there may be distinguished in relation to prices, the supplies ordinarily retained by producers for food, feed, seed, the supplies sold to dealers, processors, or consumers, the supplies actually consumed in domestic retail channels, supplies sold abroad and total production, both actual or potential. There are local, national and world supply and price relations, each in terms of appropriate prices. For the world staples, wheat and cotton, there are in addition to the above types of supply and price relations those that involve domestic and world carry-over, as well as world supplies and world consumption. In the case of livestock products additional supply and price relations are possible in terms of storage stocks. Furthermore, there are possible supply and price relations for groups of commodities and for agricultural production as a whole. So far the emphasis has been largely on total supply and price relations for individual commodities, with little recognition of the other possibilities. There has also been little recognition of the basic difference between variations in production and variations in carry-over, namely, that the former are due to changes in weather and the producers' plans, while the latter in their most depressive manifestations are due to the business cycle, and to the accompanying curtailment of consumption. Total supplies in relation to price may thus embody a large element of demand, and lead to confusing conclusions as to the relation of size of a crop to its value.

Several supply and price relations are shown in Figure 3 for potatoes, cotton and wheat. For potatoes, the price relations for production retained by producers, sales to dealers, and total production are derived from the comparable curves in Figure 1. For supplies above average, it appears that the producers' reservation-demand schedule is the most elastic, and the dealers' (or consumers) schedule at farm prices the least elastic. These three curves are in terms of prices at the farm. At retail prices the elasticity of the dealer or consumer schedule would of course be more elastic.

The examples for wheat deal with total world production, total world stocks, and total world consumption (disappearance) each

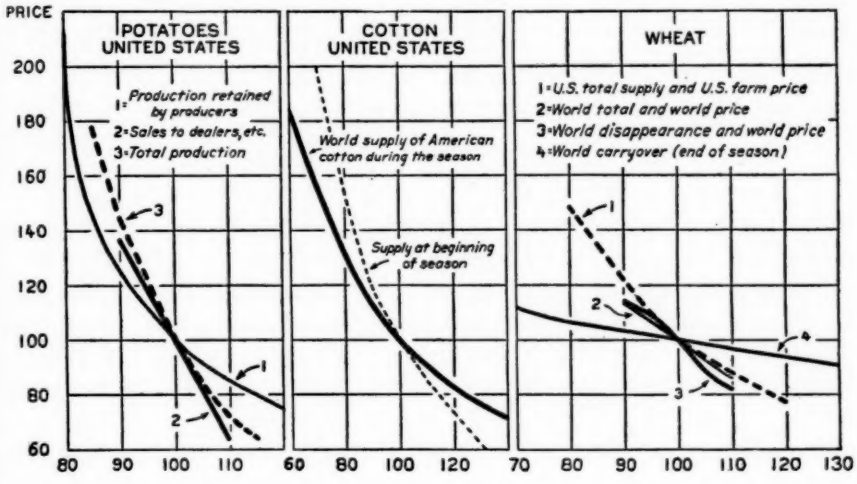

FIGURE 3.—Relations between supplies and price of potatoes, cotton and wheat.

related to world prices (at Liverpool).[5] There is also shown the relation of total United States supply to United States farm prices of wheat, under conditions of a fixed export demand for American wheat. The great elasticity for world carry-over is most striking. The other unusual feature is the suggestion of an irregular type of world consumption and price relation, being more elastic for larger and smaller supplies than for more nearly average supplies. A similar consumption-price relation was also found by Ezekiel in the case of cotton.[6]

The two cotton curves differ greatly in elasticity. The more

[5] The world price data for this analysis were supplied by Mr. Elmer Working, Bureau of Agricultural Economics.

[6] See Foreign Crops and Markets, November 8, 1926.

elastic curve represents the relation between price and the average supply during the course of the season. This automatically takes account of variations in world consumption within the season,[7] for the total supply from month to month after the new crop is known depends on the rate of consumption. The highly inelastic demand curve is derived from total supplies at the beginning of the season[8] and takes into account season-to-season changes in consumption as does the other, but not the changes within the season. In the former we have a relation in which large crops have nearly the value of small crops. This curve implies that large supplies would be worth nearly as much as small ones *provided* consumption could be increased so as to prevent an increase in carry-over. In years when that did take place, growers received as much or more for larger crops than for smaller ones, contrary to the usual expectation.

Example IV. Measuring the Price Effects of Consumption, Consumer Incomes and Competing Prices

The emphasis during the present depression on changes in demand as a cause of price fluctuations is likely to continue for some time. It has already resulted in an increase in available data on consumer incomes and in price analyses that stress changes in consumption as formerly they stressed changes in supplies. There is even the danger that price analysts may be led to attribute too much influence to consumer buying power and business conditions at the neglect of other factors such as the general commodity price level. This danger is suggested by the fact that just as in a period of more nearly stable conditions changes in supplies apparently account for most of the price variations, so in periods of depression rapidly changing demand conditions apparently account for most of the price decline. Furthermore, satisfactory methods of segregating the influences that arise from the business cycle from those that are due to the accompanying fall in the general commodity price level, have not yet been developed.

This problem of inter-correlation is particularly apparent in analyses of retail livestock prices. During the past 12 years, consumers in the United States have apparently spent for meats and dairy products amounts that varied with their current in-

[7] The supplies used here were obtained by the averaging of two quantities, carry-over plus the new crop, and the carry-over at the end of the season. This automatically adjusts supplies for variations in consumption.

[8] See Technical Bulletin No. 50, United States Department of Agriculture, B. B. Smith, "Factors Affecting the Price of Cotton."

comes. The retail values of the consumption of pork, beef, mutton, and creamery butter separately, for which commodities satisfactory data are available, bear strikingly high correlations to indexes of total consumer incomes,[9] the expenditures rising somewhat less than national income in prosperity years and falling less in years of recession. (See Fig. 4.) For this group of commodities then consumers have spent on the whole a fairly stable percentage of their current incomes, although the percentage was smaller in years of high than in years of low incomes. The price analyst is likely to reason that if expenditures for each commodity separately vary with income, the volume of consumption of each has no influence on expenditures; consequently, prices vary inversely with the volume consumed. With incomes remaining unchanged, a fixed amount of money would tend to be spent for each of these commodities individually and if the same amount tends to be spent for each item, then there can be no influence of the price of one commodity on that of another. The analysis in Figure 5, however, reveals inter-competition.[10]

The analysis in Figure 5 deals with the United States retail prices of pork as affected by consumption, consumer incomes and the retail price of beef. The relation of consumption to pork prices shows practically unit elasticity. The effect of consumer incomes is greater in years of low than in years of high income. A rise in consumer incomes of either 10 or 20 per cent apparently caused an increase of 5 per cent in price while a decline in income of the same amount caused a decline in prices of about 10 per cent.

The influence of the competing meat is here shown to operate through the price of beef. The effect of rising beef prices is noticeable but it becomes less and less so for years of high beef prices. This method of showing the competing influence of beef prices on pork prices is of course subject to the qualification that beef prices are also affected by pork prices and by the same conditions of consumer demand. The inter-correlation problem involved here could be avoided by substituting the quantity of beef consumed instead of its price. But it has been shown[11] that

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[9] For the purposes of this analysis we make use of a measure of consumer incomes, derived from the gross income of corporations. These represent disbursements for materials, labor, dividends, etc., and are thus equivalent to streams of income for others groups. This series in the aggregate is larger than the national income with which it is highly correlated. Incidentally it indicates for 1929 a national income of about $91,000,000,000 and for 1932 about $55,000,000,000.

[10] See also examples used in "The use of Trends in Residuals" by Bean and Thorne, Journal American Statistical Association.

[11] See M. Ezekiel's paper before Section K of the June, 1932 meeting of the American Association for Advancement of Science at Syracuse, New York. "Some Considerations on the Analyses of the Prices of Substitute Commodities."

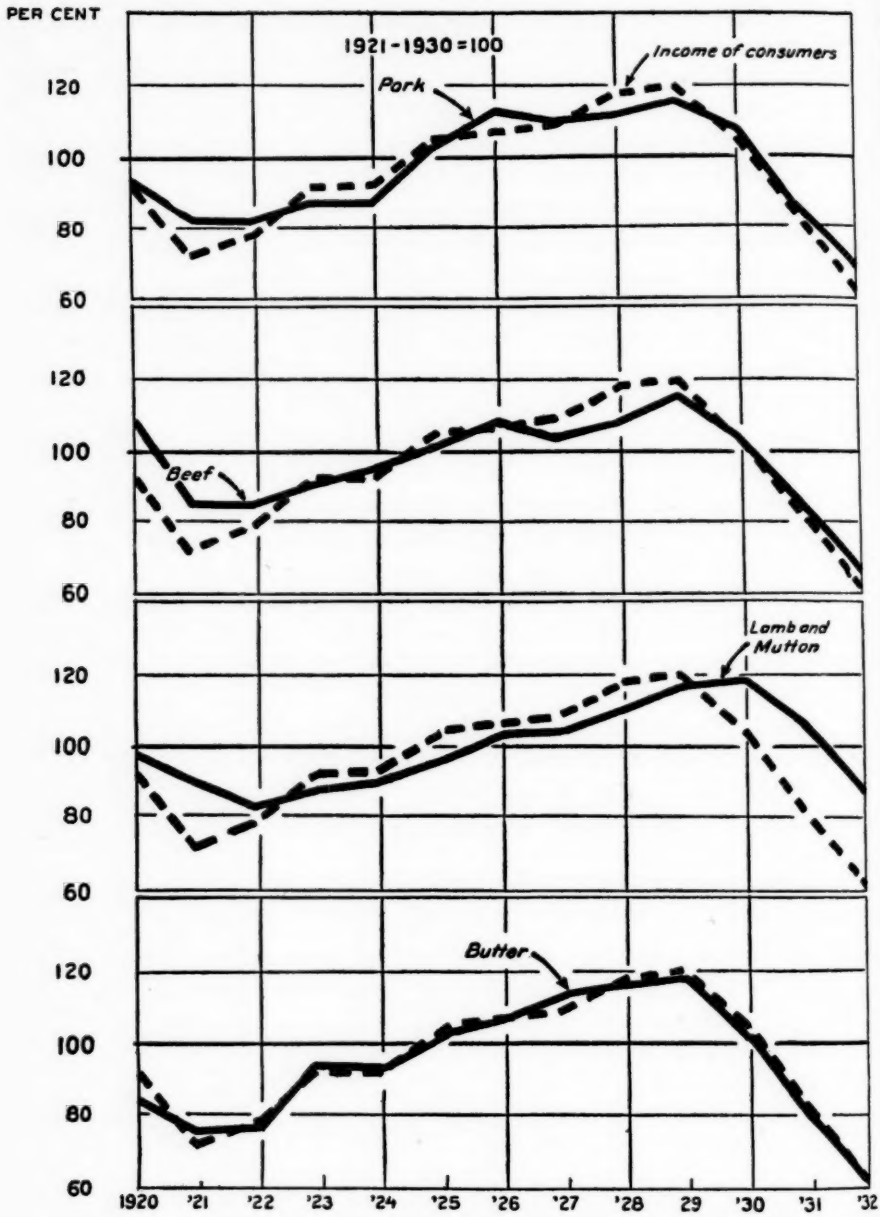

FIGURE 4.—Income of non-agricultural consumers compared with retail expenditures for selected foods, United States, 1920-1932.

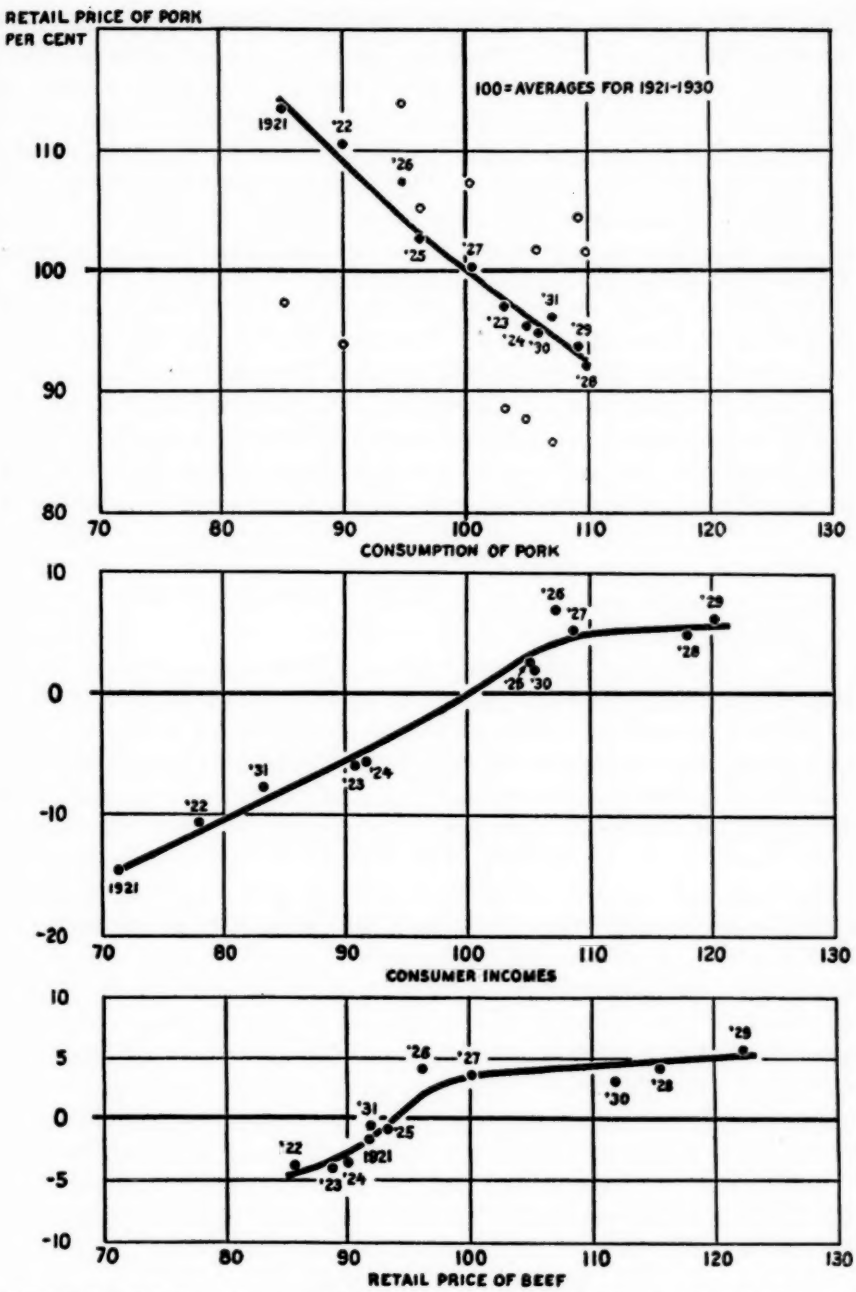

FIGURE 5.—Relation of consumption, consumer incomes and beef prices to the retail price of pork, 1921-1931.

the results are less reliable and that the method of multiple correlation used here leaves only a small margin of influence that can not be definitely distributed as between the two interrelated prices. To the writer it appears that the major competitive influence, insofar as the individual consumer is concerned, arises from the price of the competing product rather than from the supply conditions which he may or may not be aware of and which in fact may not at any moment be the dominant factor in price fluctuation of the competing product.

Example V. Relation of Total Farm Production to Farm Prices, Farm Income and Consumer Expenditures

Competitive influences among farm products of which the foregoing is an illustration offer wide possibilities for research. The field is as yet practically untouched. In part it will be developed as a result of the greater emphasis on consumption-price relations, and in part as a result of the current and subsequent proposals for agricultural relief through price influencing measures, the success or failure of which is intimately tied up with the consumer's response.

The available supply and price relations have for the most part been devleoped without regard to the competing influence of other commodities which consumers are free to substitute, except insofar as the inclusion of a general commodity-price index may be considered as representing that factor of competition and substitution in the consumers' expenditures. The question is thus raised as to the influence of volume on price as more and more commodities are included in a single group, and as the possibilities for substitution on the part of consumers are narrowed. Is the elasticity of demand greater or less for one commodity than for a group of related commodities? We have already pointed out that for livestock products as a whole consumers tend to spend about the same amounts, income remaining unchanged—a case of unit elasticity. Analyses of the component items also suggest approximately unit elasticity for pork, beef, mutton and butter. If for the entire group of livestock items, consumers tend to spend a fairly constant amount, it follows that an analysis beginning with one commodity and then expanded to include finally the entire group of livestock products must lead to unit elasticity for the group. This conclusion is also suggested from a tentative analysis of other groups of commodities such as fruits and vegetables. If the analysis begins with a single commodity having a

very inelastic demand, taking other commodities into a composite curve must result in a curve which represents the average of the individual elasticities. Thus taking production of several fruit crops at 20 per cent below average, prices of grapefruit have been 50 per cent above average, oranges and grapes 30 per cent and apples 16 per cent, compared with 20 per cent for all fruits combined. In this composite, the apple crop is the most important item.

Our evidence so far points to approximately unit elasticity when all farm products are combined, a conclusion which is of considerable import in schemes for securing for all of agriculture a larger share of the national consumers' expenditures, particularly those plans which involve a reduction in farm output. It leads to the obvious conclusion that even a large reduction in total output to obtain a higher price level for farm products might result in no increase in gross income. The gain would be largely in a reduction in certain costs of producing and marketing a smaller volume and possibly additional gains if margins between farm and retail prices are not raised. If these margins remain fixed, the elasticity in the national retail market for all farm products combined should be greater than in the farm market and a smaller output should result in a larger net income to producers. This conclusion, however, does not take into account some important offsetting influences arising from a disruption of much of the domestic consumer market if agriculture were to undertake a drastic cut in production, and thus undermine the welfare of dependent industries.

Some of the broad facts involved in this general problem are contained in Figure 6 where total farm output has been related to gross farm income, farm prices and consumer incomes. In the period 1921-1932 there appears to have been no influence of volume on gross income, indicating unit elasticity for the composite of farm production and farm prices. Most of the variations are shown to be related to changes in the national, nonagricultural income for this period. Thus consumer incomes in 1921 about 24 per cent below the 1924-1929 average were associated with gross farm income about 24 per cent below average and in 1931, consumer incomes about 32 per cent below average are with a similar reduction in gross farm income. Additional influences on farm income, arising chiefly from foreign competition and demand indicate favorable influences, particularly in 1924 (a year of good foreign demand for our grains and livestock products)

and gradually weakening influences after 1924-1925, probably arising from the increase in foreign competition and the curtailment of foreign purchasing power. For the entire period 1921-1932, the influences on farm income arising out of the domestic market are shown to have been about three to four times as large as those associated with the other factors.

Is there not a discrepancy between this showing of unit elasticity for the total agricultural output at farm prices and the

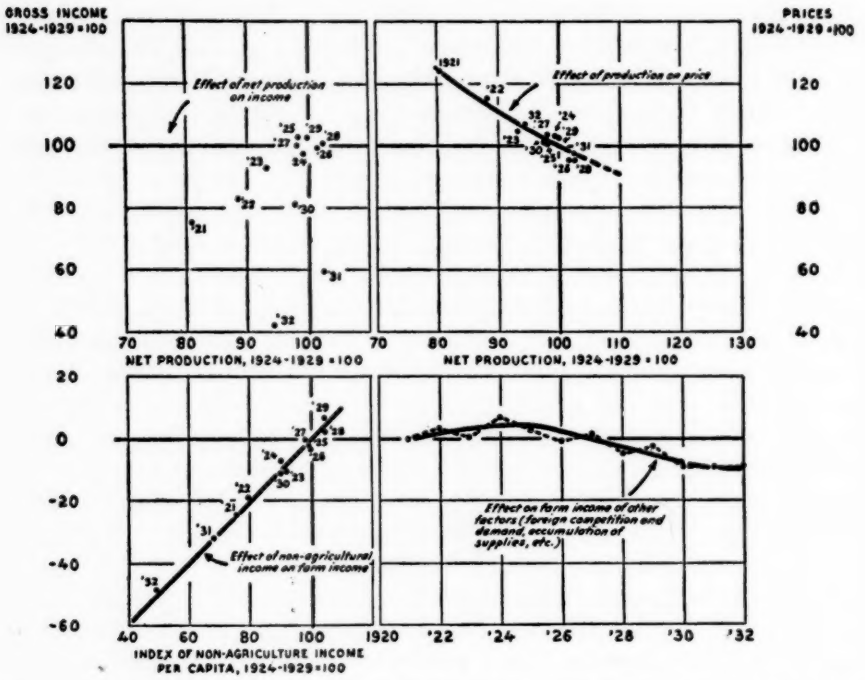
GROSS INCOME 1924-1929=100
PRICES 1924-1929=100
Effect of net production on income
Effect of production on price
NET PRODUCTION, 1924-1929=100
NET PRODUCTION, 1924-1929=100
Effect of non-agricultural income on farm income
Effect on farm income of other factors (foreign competition and demand, accumulation of supplies, etc.)
INDEX OF NON-AGRICULTURE INCOME PER CAPITA, 1924-1929=100

FIGURE 6.—Relation of total farm production and consumer incomes to farm prices and farm income, United States.

suggestion made earlier of unit elasticity for certain major food items at retail prices and presumably for all of the consumption of farm products. There are several facts to be borne in mind. First, farmers retain more than 10 per cent of their total net production for their own use as food and fuel, and ordinarily more than 10 per cent of the total net production is sold for export. The cash income derived from the entire year's output has in recent years been about 85 per cent of the total gross income. Allowing for exports, the cash income from domestic sales prob-

ably amounted to about 75 per cent of the total gross income. The volume of farm products involved in the national consumer schedule is, therefore, probably about three-fourths of the volume contained in the gross income analysis (in Fig. 6). On the other hand, the retail values involved, judging from such data as are available as to the spread between farm and consumer markets may be two to three times as great. A simple calculation, making use of these broad averages and assuming margins constant leads to the suggestion that the elasticity of demand for the national consumer market is somewhat greater than that shown here in terms of farm values. But margins do not necessarily remain fixed as between years of high or low prices. In many instances they tend to vary with prices and thus to make the total consumer demand schedule more nearly like that suggested by the relation between farm output and farm prices.

Example VI. Changes in Supply and Demand Related to Non-agricultural Prices

Another fruitful field for price analysts that may be expected to be more vigorously pursued in the near future is the field of nonagricultural prices. Since H. L. Moore demonstrated that the correlation of production of industrial products with their prices yield a positive curve in contrast with the negatively sloping curve for agricultural products many economists and price students have been baffled. The earlier acceptance by some economists of Moore's thesis of a positive demand curve for industrial products has since been modified by the more general recognition that results in price analyses depend a great deal on the methods employed, and that while simple methods in the case of certain agricultural products may lead to approximate truth, the same methods applied to other commodities may completely fail. The difficulties in the field of research are at present chiefly those of method, those of satisfactorily disentangling causal forces where very high inter-correlation exists between supply and changes in demand. While the thinking in this field is gradually leading to the conclusion that the basic responses of price to supply of nonagricultural products are actually similar to those of farm products, the differences being chiefly in the greater readiness with which industrial supplies can respond to changing demand conditions, price analysts still fall into the error of showing positive relations between production and prices of industrial products, when a proper employment of multiple instead

of gross correlation technique would lead to the opposite conclusions. For that reason and also with the hope that this field of price analysis be more widely developed and the basic rela-

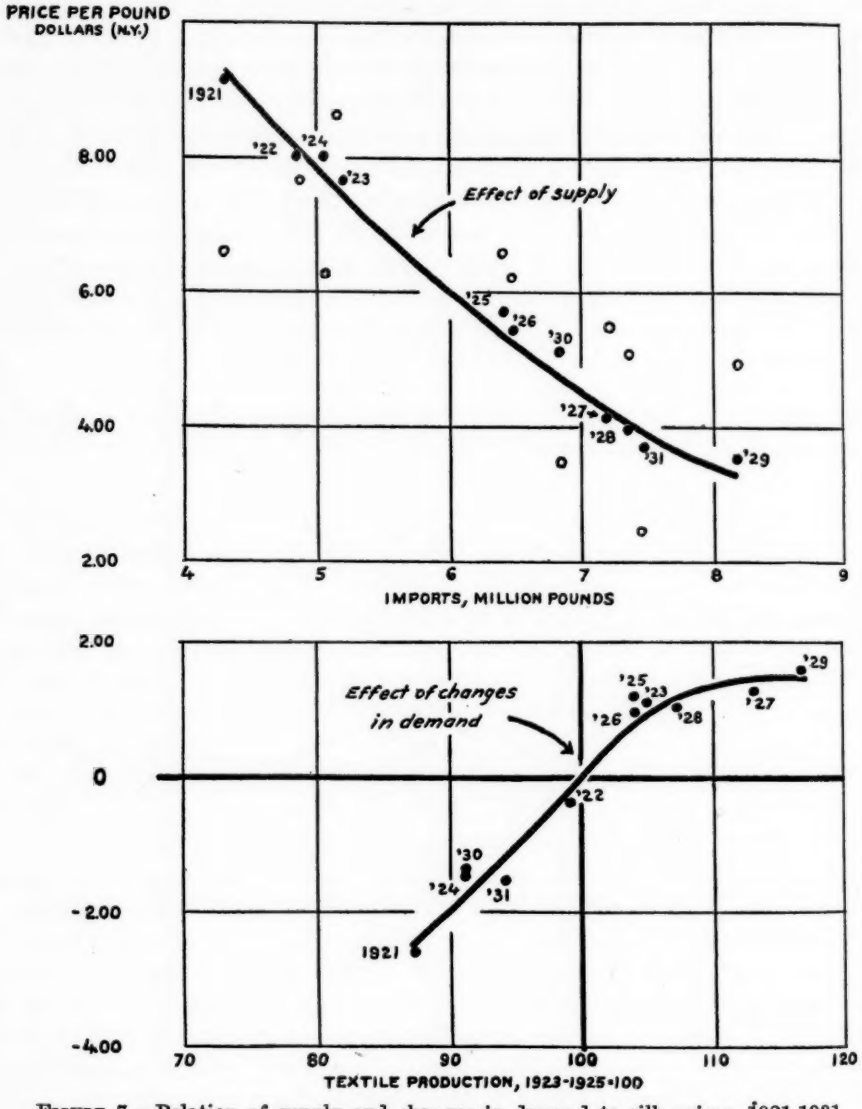

FIGURE 7.—Relation of supply and changes in demand to silk prices, 1921-1931.

tions more clearly realized there are presented two illustrations (in Figs. 7 and 8) of nonagricultural prices of widely different character, namely silk and iron and steel. By applying the same

reasoning and technique as we usually employ in the case of agricultural products we obtain results for these and other non-agricultural products that require no new theories of price behavior.

In the case of silk, there is shown a relation of supplies (imports) to prices in the United States of the type found in all agricultural price analyses. In addition, the shifting of this supply and price curve is shown to be related to the variations in the

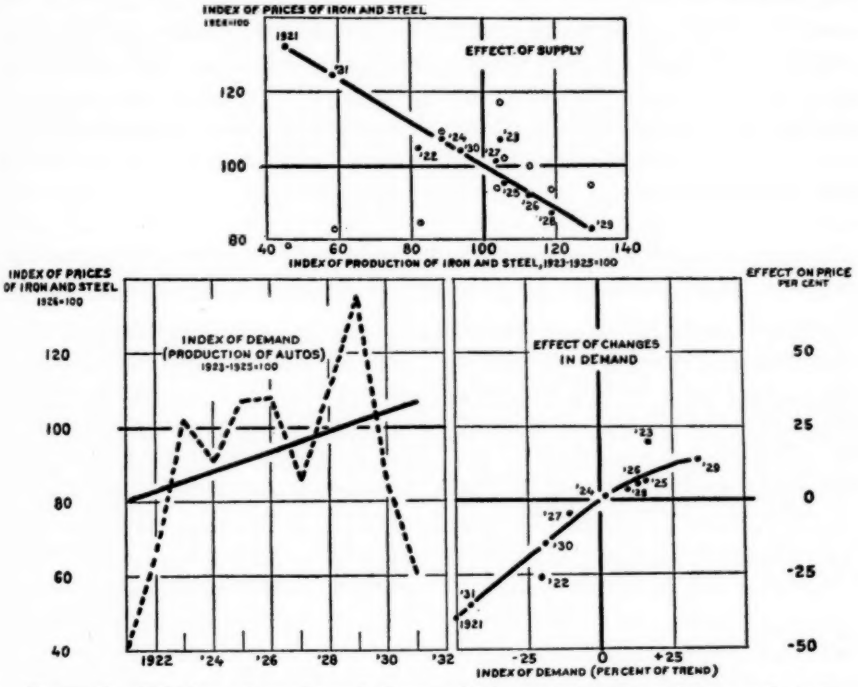

FIGURE 8.—Relation of supply and changes in demand to prices of iron and steel, United States, 1921-1931.

demand for silk, these variations being represented here by changes in textile production in the United States, the latter being highly correlated with industrial production and consumer incomes in general.

In the case of the composite of pig iron and steel (see Fig. 8) it will be seen that a simple gross correlation between production and actual prices would have given a positively sloping regression, but by the mere inclusion of a factor representing changes in demand for iron and steel (in this case, using simply for illustrative purposes the production of automobiles, one of the chief

sources of demand) there is revealed the typical negatively inclined regression or relation between production and prices, while changes in demand show a positive correlation. Closer examination of this figure will reveal the fact that the changes in production of iron and steel respond very closely to the changes in demand, and it is the latter fact which has led a number of economists and price students astray.[12]

For all of the industrial production of the United States as measured by the Federal Reserve Board Index, the relation to a composite price index is similar to that for iron and steel. It thus appears that the total production-price relation for industrial products is more elastic than for agricultural, a 10 per cent increase in volume being associated with a 5 per cent decline in prices of nonagricultural products and with a 9 per cent decline for agricultural.

Example VII. Supply as a Factor in the Disparities Between the Components of the General Commodity Price Level

The results of the price research of the past decade have demonstrated the need of further work on the relations of supplies to prices with special emphasis on the different relations that may exist in periods of rapidly changing general price levels and in periods of depression or prosperity. Another fact that appears from the past efforts is the importance of supplies as a factor in the relations (a) between prices of different grades and varieties of an individual commodity, (b) between prices of individual commodities (c) between prices of groups of commodities, and (d) between prices in different areas of a national or international market. With respect to (d), it is demonstrable, for example, that the prices in the different producing areas are functions of the national average farm, wholesale or retail price and that the variations in local prices from the national average are due largely to variations in local supplies either actual, or relative to the national supply. Similarly, there are evidences that in the case of an international commodity such as wheat, prices in different countries deviate from a world wheat price level partly because of variations in national and local supplies and partly because of changes in demand and trade factors. It is probable that more attention will in the future be given to the analysis of national

[12] In Figure 8, the demand changes are measured as percentage deviations from trend and the associated price changes as percentage deviations from the production and price curve. In the other illustrations, absolute deviations are correlated with demand changes.

prices in terms of national supply and demand factors and that in these studies local prices will be treated both as part of a national price structure and also as related to local supply and demand conditions.

The illustrations which conclude this paper deal, with the spreads or disparities between two individual commodities and between the two major groups of commodities that compose the general level of wholesale prices in the United States (See Figs. 9 and 10). In each case it is apparent that relative supplies play a very important role. In the case of beef and pork prices the competitive influences are so marked that a very high inverse correlation appears when beef prices are treated as deviations from pork prices and when beef consumption is treated as deviations from pork consumption. Similarly, when prices of agricultural products are treated as deviations from prices of nonagricultural products it appears that relative supplies are an important factor. The supplies in this case are the volume of manufactures in establishments using agricultural raw materials, (foods, textiles, tobacco, etc.) and of those using nonagricultural raw materials (iron and steel, cement, etc.). This sort of relation is of course to be expected, partly because industrial prices as well as agricultural are influenced by their supplies and partly because of the wide exchange of nonagricultural for agricultural products that forms a part of our national economy. A closer classification of agricultural and nonagricultural prices than that used here for illustrative purposes and taking into account foreign supplies as well would probably reveal even more clearly the interrelation between relative supplies and relative prices.

One broad implication from this last observation may serve with which to conclude. It is that the agricultural price disparities in the wholesale market that become so prominent during major depressions are due in large part to the creation of relative "over-production" of farm products and their derivatives in contrast with the great curtailment that occurs in nonagricultural lines. Possibly, if agricultural output in depression periods were curtailed as much as nonagricultural the wide price disparities would not appear and possibly some of the decline in the general level of prices might be obviated. To members of this association it is not necessary to point out why such agricultural contraction does not appear in years of depressed demand, nor what additional havoc it would play on the national economy if millions of farmers joined the ranks of the millions of unemployed,

and restricted the output of food products by say 60 per cent as the output of other commodities has been reduced in the past three years. But it is worth pointing out that relative to the

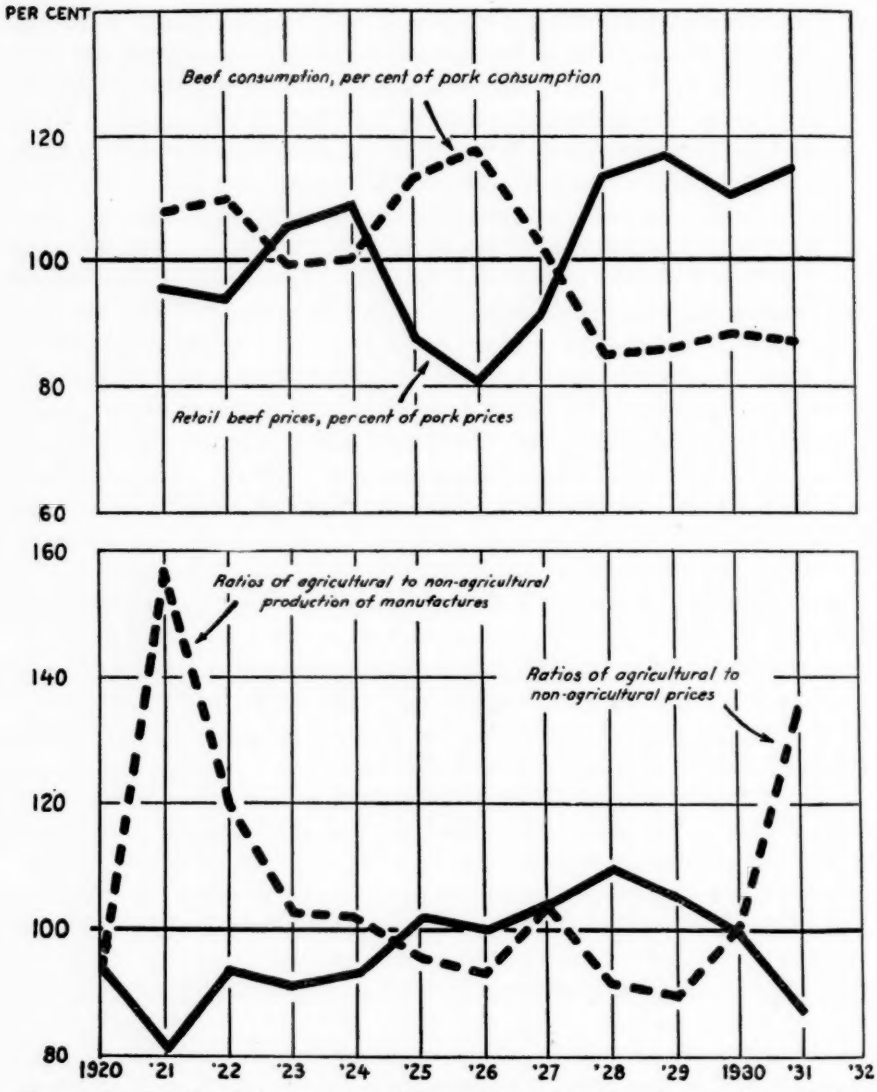

FIGURE 9.—Relation between ratio of quantities and prices of competing products.

reduced nonagricultural production, the relatively stable output of the farms is now about twice as great as in recent years and the level of prices of farm products is (40 per cent) lower.

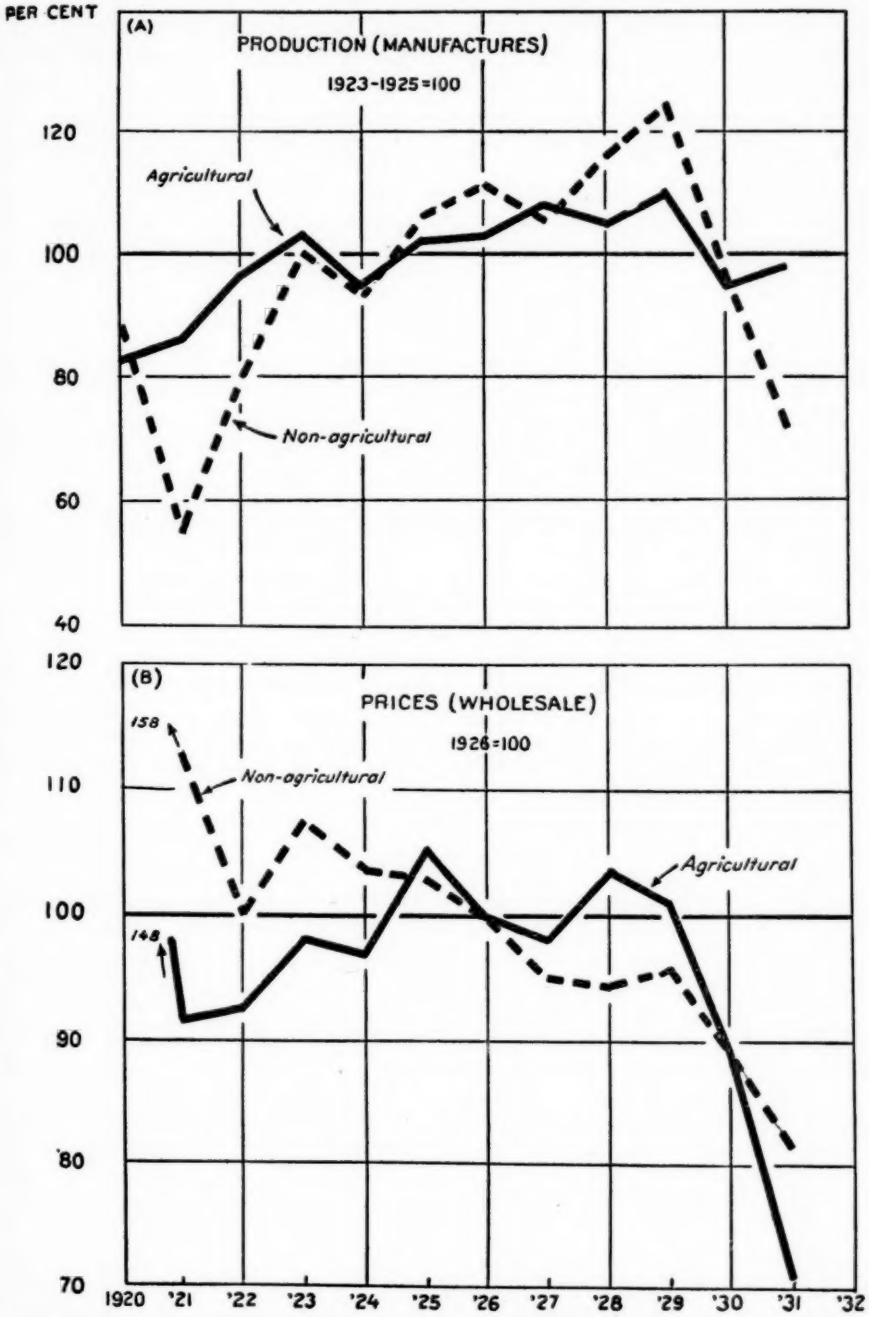

FIGURE 10.—Production and prices of agricultural and non-agricultural products in the United States, 1920-1931.

The closing of this gap between the agricultural and non-agricultural components of the general price level depends in no small part on the increase in industrial output more nearly in line with the current volume of farm production. As a result of price research along these lines during the next few years we shall probably have a clearer notion as to the reasons for the almost periodic appearance and disappearance of agricultural price disparities.

Discussion by H. A. Wallace

Wallaces Farmer

First, I wish to express my keen appreciation of the splendid, commonsense work done by L. H. Bean in working out the technique of graphic multiple regression lines or curves in unraveling supply and demand forces as they affect prices. Mathematical correlation studies still have their place but for most purposes Bean's methods of graphic analysis are far superior. One great advantage of the method is that the research worker himself is philosophizing as he puts in the dots representing the different years. He is impressed by the exceptions and is trying to discover a cause for such exceptions. He is then led to decide what factor he will use next in endeavoring to explain the first differences. By following methods of this sort, the mind of the research worker becomes thoroughly alive with the problem in hand. During the past three years I have regretted that the research workers in the fields of physical agricultural science were not more fully acquainted with the Bean method of graphic approach. Suffice it to say, therefore, that I have the greatest respect for any paper prepared by Mr. Bean.

Having said such nice things about Mr. Bean's method, things which I really believe, I would like to make the further comment that even with the most ingenious methods of research, it is necessary to be continually on guard against falling in love with the method itself simply because it is so useful. I think Mr. Bean is fully aware of this peril, but some of the people who use this method may not be.

I am struck with Mr. Bean's first graph dealing with potatoes in which he calls attention to the fact that since 1921, a shortage of 20 per cent of potatoes practically doubled the price whereas before the war, a shortage of 20 per cent ordinarily resulted in increasing the price by about only 30 per cent. Something has evidently happened since the war to change certain supply and demand relationships. I cannot help but wonder if this same thing has not happened to other commodities besides potatoes. In other words, I am skeptical about drawing any hard and fast rules about the laws of supply and demand based on studies of this sort, splendid though these may be. At any rate, I would want to supplement these studies, as I am sure Mr. Bean would, with a careful consideration of surrounding circumstances, including especially changes in the nature of the foreign demand flowing out of the creditor position, the tariff attitude and the debt policy of the United States.

Without any desire to enter into a dry, quibbling, pettifogging discussion, I wish nevertheless to raise a question concerning Mr. Bean's statement:

"The earlier acceptance by some, of Moore's theses of a positive demand curve for industrial products has since given way to questioning and clearer thinking on this subject as a result of the more general recognition that results in price analyses depend a great deal on the methods employed, and that while simple methods in the case of certain agricultural products may lead to approximate truth, the same methods applied to other commodities may completely fail. . . .

"By applying the same reasoning and technique as we usually employ in the case of agricultural products we obtain results for these and other non-agricultural products that require no new theories of price behavior."

I am led to comment on this statement because I know as a result of private conversation with Mr. Bean that I am one of those who, he feels, has been somewhat led astray by Mr. Moore. He feels this particularly because of an article by me published in the January 1925 Annals of the American Academy of Political and Social Science. In this article, I presented figures year by year from 1882 to 1913 for agricultural prices and agricultural yields as distinguished from industrial prices and industrial yields. After presenting the statistics in the 1925 article, I said:

"The outstanding feature of the situation is that with pig iron and coal the greater the production, the higher the price. Of course this is an economic absurdity. It cannot be true even though we have perfectly good figures for the years 1882-1913 to prove it. Of course the truth of the situation is that with most mined or manufactured commodities prices come first and supply comes second. In agricultural, supply sets the price. In industry, price sets the supply."

I then went on to say:

"Farmers find it difficult to follow in the footsteps of the industrialists in molding supply to price for the following reasons:

"(1) There are a thousand times as many farmers producing staple farm commodities as there are industrialists producing coal, iron, etc.

"(2) Farmers are separated by distance, prejudice and ignorance.

"(3) The size of the supply of farm crops depends largely on weather and to a lesser extent on insects and diseases, over which very little control can be exercised.

"(4) Farmers for the most part have a large number of middlemen between them and the consumer and these middlemen feel that it is their function to determine farm product prices rather than the farmer.

"(5) There are many types of farmers producing the same commodity. Certain poor tenant farmers and owners with large mortgages may be willing for a time to sacrifice completely a decent white man's standard of living in order to produce and sell on a demoralized market at far less than a reasonable cost of production. Imagine the chaotic price situation in pig iron if each workman had a few tons to sell and if he sold them on the basis of his individual necessities rather than the general pig iron situation.

"Industrial concerns from time to time have met many of the farm difficulties just enumerated."

My conclusion of the whole matter was:

"None of the myriads of farm cooperative organizations have been able to work out as effectively as the pig iron and coal people the problem of letting price determine the volume of production.

"Producing food is handled today on a totally different economic theory than producing industrial products. As to whether a satisfactory agricultural civilization can be built up under such a situation is doubtful. The tendency for the people in the cities will be to avoid any careful study of this problem."

In all of this, I do not see that there is any essential difference between Mr. Bean's attitude toward non-agricultural products and my own. We both agree that in industry, supply responds more suddenly to changes in price than is the case in agriculture. For some reason, Bean wants to emphasize the fact that when everything is taken into account, the price behavior of industrial products is just the same as the price behavior of agricultural products. I suppose this is true but I doubt if the data will ever be available completely to prove it. Because of the fact that agricultural output cannot be expanded and contracted as rapidly as industrial output and because there is no centralized control to bring about such expansion and contraction and also because of the fact that stability of population growth and stomach size determine certain things with regard to the non-elasticity of demand for basic agricultural products,—I am inclined to think that on the surface at least there will always appear to be quite a significant difference between the supply and price reactions of agriculture and of industry. Of course, I hope that as more control is introduced into agriculture, these differences may be somewhat minimized.

It is interesting to note how the attitude or motive of a person influences the way in which statistics are presented. All of us are human. In my 1925 article I was striving to build up a statistical background for more adequate control of agricultural production.

H. L. Moore in his various articles on "generating cycles of products and prices" seemed to be chiefly concerned in discovering a rhythm to human effort, and then to discover a cause of that rhythm. He was a fundamentalist and thought he discovered the origin of the industrial rhythm in an agricultural rhythm, and the origin of that in turn in a weather rhythm which in turn, he thought was caused by the fact that the earth, the sun and Venus returned to the same approximate position every eight years. Neither Mr. Moore nor myself were working on the problem which fascinates Mr. Bean.

I am much interested in the closing two paragraphs of Mr. Bean's paper in which he points out that during depressions agricultural output is not curtailed in the same way as industrial output and in which he traces the unfavorable ratio between agricultural prices and other prices to this lack of control. He seems to feel that any definite, hard-boiled control of agricultural output in line with the control of industrial output would bring on chaos and suggests that the constructive way out is to increase industrial output rather than to reduce agricultural production.

Within certain limits and under certain conditions, I have no doubt that these observations of Mr. Bean are correct. But with the relationship

between the United States and other nations as it is today, I am wondering if it may not be sounder for the United States to reduce her agricultural production. Tariffs, international debts, depreciated currencies, exchange quotas, tonnage quotas, etc., make it quite unlikely, even though the next administration should prove to be exceedingly enlightened, that we can find an immediate satisfactory market for a sufficient supply of our pork, lard, wheat, and cotton to enable agricultural products to sell for a fair price relative to the things which farmers purchase. Surely Mr. Bean would not have us conclude from his charts that we should continue to produce agricultural products without regard to the market and that the only sound way out is an increase in industrial products.

I have, as I have said before, the greatest respect for Mr. Bean's methods but I do not like to see them applied outside of their true field. Any philosophical economist who wishes to keep his feet on the ground can use Mr. Bean's method to the greatest advantage. But it seems to me that when these methods are applied to supply, demand and price relationships, it is important at all times to remember the nature of the particular set of years under consideration. It seems to me especially important in any supply and price studies at the present time to keep in mind the possible implications of the world picture. In brief, I hope that the people who operate Mr. Bean's machinery for economic research will be well grounded on the one hand in the technique of agricultural production and on the other hand in international relationships. For my own part, I might as well confess that while I will never lose my love for playing with figures in an effort to establish relationships, yet I am becoming increasingly suspicious of the conclusions of men who spend more than a certain percentage of their time in purely statistical endeavors. One of the great contributions of Mr. Bean, it seems to me, is that his method of research relieves the worker to the greatest extent possible from pure drudgery and thus gives him the opportunity of demonstrating to the limit his ability to describe the economic world as it is and to imagine the economic world as it might be.

THE NATURE OF STATISTICAL SUPPLY CURVES[1]

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The responsiveness of supply to price is matter of great economic importance, yet it is only within the past fifteen years that any attempts have been made to study it empirically. During this fifteen-year period, however, the statistical attack has been carried forward with such vigor by Ezekiel, Bean, Schultz, Smith, Leontief, and others that substantial gains have already been made. It is in order to consolidate those gains that we pause today for some critical discussion and appraisal. The particular object of the present paper is to consider the economic implications of the various statistical methods that have been employed.

Adopting a classification appropriate to our purpose we may divide the studies that have been made into two main classes: *first* those in which conclusions about the responsiveness of supply are based upon investigations into the underlying conditions of production; and *second* those in which the conclusions are based directly on analyses of past experience with respect to prices paid and the responses actually associated with them.

The first of these methods although fundamentally sound and naturally attractive to both economists and business men is of little practical value. Cost of production studies such as those made by the Tariff Commission can tell us very little about the probable responsiveness of supply, and the familiar bulk-line curves commonly derived from these studies have proved to be positively misleading. A more refined type of production analysis, employing methods of hypothetical substitution rather than methods of cost accounting, has been suggested by J. D. Black[2] as a means of deriving what he calls "synthetic supply curves," but actual studies of this sort have not yet been carried beyond the most elementary stages.

More important for immediate practical purposes are the studies which belong to the second main class mentioned above. namely those which are based directly on observed past experience with respect to responses. Within this class we may draw a further distinction between those studies in which the quantities supplied are related to the prices prevailing at the time

[1] This paper was read at the Twenty-third annual meeting of the American Farm Economic Association, Cincinnati, Ohio, December 30, 1932.
[2] Interregional Competition in Agricultural Production, Project 6 in the Report of the Social Science Research Council on Research in Farm Management (1932), p. 98.

when the commodity was marketed and those in which the quantities are related to prices prevailing at some earlier period. This latter method of relating quantities to previous prices was introduced by H. L. Moore[3] in the first study ever made of actual supply responses, and it has been adhered to throughout by American economists in practically all the work they have done. Elmer Working[4] and P. G. Wright[5] have referred to the possibility of deriving supply curves in particular cases from concurrent series of prices and quantities, Shultz[6] has actually used series associated without lag in deriving his supply curve for sugar, but the only person who is thoroughly convinced of the general validity of this procedure seems to be Leontief.[7]

Even among the studies made by the American economists there have been significant differences in detail. Some have measured the supply response in acres and others in output. Still others have measured it only indirectly by its influence on the price of the product at some later date. Some have expressed the price factor in absolute terms corrected only for changes in the general purchasing power of money while others have expressed it as a relative based on the price of the preceding year, on the prices of alternative products, or on the prices of important input elements. Each of these various methods has its own economic implications.

There seems to be no better way of opening up our discussion than by relating the statistical studies that have been made to the theoretical work of the neo-classical economists and particularly to the three different types of supply curves distinguished in the Marshallian analysis: the market curve, the short-run normal curve and the long-run normal curve.

1. The simplest of these curves is the first one, which relates to the marketing of supplies already in existence. It is a holders' or dealers' curve rather than a producers' curve. It is a simple curve, but an extremely unstable one. Being affected only indirectly by the physical conditions of production, its character is dependent almost entirely on the psychological reactions of the holders of the supplies. If these reactions were based on any fundamental human wants we might expect this curve to retain a fairly consistent form for considerable periods of time,

[3] Forecasting the Yield and Price of Cotton (1917) p. 86.
[4] What Do Statistical Demand Curves Show? *Quarterly Journal of Economics* (1927) pp. 212-227.
[5] The Tariff on Animal and Vegetable Oils (1928) Appendix B.
[6] Henry Schultz, Statistical Laws of Demand and Supply (1928) Chapter V.
[7] Wassily Leontief, Ein Versuch zur Statistischen Analyse von Angebot und Nachfrage, Weltwirtschaftliches Archiv (July, 1929).

but since the willingness of holders to sell their stocks is determined largely by their judgments about current market conditions and immediate future prospects the curve has only a speculative basis and is by its very nature fickle and elusive.

Not only is it affected by external factors which are subject continually to capricious change, but there is also about it an internal instability which results from the readiness with which people accept current price adjustments as forecasters of further change. The theoretical difficulties arising from this internal instability are fully discussed by Professor Taussig in his article "Is Market Price Determinate?"[8]

The statistical difficulties involved in dealing with this speculative supply curve are so great as to appear almost insurmountable. It is possible, however, that in cases where farmers are the holders of the stocks of the commodity in question the price responses may be more consistent than our theoretical considerations would lead us to expect. The less conversant the sellers are with the underlying market conditions and the less actively they are engaged in speculative dealings the more likely they are to respond in a calculable way to increases or decreases in the market price for their product. Much remains to be learned about the nature of these responses and the reliability of the curves that are supposed to represent them.

2. Very different in character is the long-run normal curve. It was especially designed to deal with the relations between the valuation process and the principles of increasing and diminishing returns. The supply price for each amount is supposed to be determined on a basis of marginal costs as they *would* be if the producers enjoyed at the time all the external and internal economies (or lack of them) associated with that particular scale of production.

By means of these long-run normal curves Marshall was enabled to use as basic material in his theory of value the most fundamental laws that had been discovered in the field of physical production, namely the laws of increasing and diminishing returns. He recognized, of course, that conditions of true normal equilibrium are seldom attained in actual life but he believed that the essential nature of our economic system could only be revealed through a study of what *would* happen if its most fundamental forces were allowed to work themselves out undisturbed. He was interested in developing a logical system of principles

[8] *Quarterly Journal of Economics* (1919) p. 394.

based upon recognized chains of causal relationships and it is well to remember in the present discussion that his theoretical concepts have a value and a validity of their own as intellectual tools for economic analysis which are entirely independent of their usefulness in empirical research or the possibility of their statistical verification.

As a matter of fact the statistical derivation of a long-run normal curve is likely to prove impossible. Even if the prices established in actual markets during the periods of greatest stability were accepted as fair approximations to the true normal prices for those times we would still be unable to obtain a sufficient number of observations for statistical manipulation. Years would have to elapse between the observations if long-run equilibrium were to be established in each period for substantially altered volumes of output. During the intervening years prices might be carried far out of line by short-run conditions of supply and demand and by the time that long-run equilibrium was re-established the fundamental conditions of supply might very well have been changed by the introduction of new inventions or by other significant alterations in the technique of production. For example, there may have been good reason for saying in the years just before the War that the normal price of wheat in this country was about $1.00 per bushel and there may have been good reason for saying in 1928 that the normal price was about $ .80 but it would clearly be wrong to suppose that these prices correspond to points on any long-run normal curve. The arts of production had not remained the same from one period to the other.

3. There still remains to be considered the short-run normal curve. It brings us much nearer again to the realm of everyday experience. It applies to conditions in which supply is limited to what can be produced with the existing productive equipment of the community in its present form and these conditions prevail at all times with regard to immediate future supplies. This is, in fact, the curve to which our statistical studies are most nearly related.

Because of the difficulty of forcing a larger output from a plant already operating at its optimum capacity, because of the special inducement necessary to attract agents from other employments, and because of the relative inefficiency of these new agents when they are first enlisted, Marshall concluded that in the short-run an increase in the amount demanded raises the

normal supply price. "This law" he says "is almost universal even as regards industries which in the long-run are subject to conditions of increasing return."[9] The universal validity of the law may now be questioned but the fact remains that the short-run supply curve may be (and in many cases probably is) inclined in the opposite direction to the long-run curve.

Even in agriculture where conditions of increasing returns are unlikely to prevail the difference in direction of the long-run and short-run curves may be as great as 90 degrees. The tendency to decreasing returns in the production of an agricultural commodity is commonly misunderstood and the consequent upward slope of the long-run supply curve is frequently exaggerated in theoretical discussions. The increased output of any particular product need not bring into operation at all the classical law of diminishing returns from land. The increased output of the one commodity may be obtained by curtailing the output of some others and the total production from the land may be no greater than before. Decreasing returns are more likely to be due to the less advantageous combination of enterprises which may result from these changes. It is possible that for many products, although a considerable increase in price might be necessary to call forth an increase of supply in the short-run, a price very little above the present level might be sufficient to maintain the new output once the adjustments had been made.

The more sudden and violent the increase in demand the more difficult it will be for supply to keep pace with it. Time is required for the organization of extra shifts, for the renovation of old machinery, for the augmentation of the labor force and for the assembling of additional supplies of the input elements. More time is required for new producers to come into the field and still more for efficiency to be introduced into all the new arrangements. The longer the period allowed for adjustments to be made the more successfully can the tendency to transitional decreasing returns be overcome and the more advantage can be taken of the economies of large-scale production.

It is evident from the foregoing discussion that there is no such thing as an unconditional supply curve. There is no curve which can be regarded as the *one-and-only* supply curve for any particular commodity. The character of each depends on the time specifically allowed for variations in output to take place. What we have, as a matter of fact, is a whole series of supply curves for each commodity representing all possible conditions

[9] Principles (eighth edition) p. 370.

between the most perfect long-run normal adjustment and the most rigid momentary fixity of supply. Graphically speaking we may think of the supply curve for the very shortest period as a vertical line on the familiar two-dimensional chart and the supply curve for the very longest period as a line approaching the horizontal. Then, between these two extremes there will be a fan-like system of curves, each with a slope of its own, representing the various conditions of supply when adjustment periods of intermediate lengths are allowed for.

The recognition of this fact suggests at once the necessity of considering carefully in every case the implications of our statistical methods with respect to the time element in the responses. Ezekiel[10] and Bean[11] have been particularly careful to point out that their curves represent responses that are made within stated periods of time. They have in fact been interested in comparing the responses made when different adjustment periods are allowed for and Ezekiel in his milk studies has used three different lags in the same multiple correlation analysis in order to take into account the most important types of adjustment that are involved.

Some other writers have been less explicit and the time-character of their curves may readily be misunderstood. In dealing, for example, with Moore's[12] supply curves we are apt, I think, to lose sight very easily of their temporal limitations. Since a twelve-month lag is used in deriving them they should probably be taken to represent those responses which follow price changes within the period of a single year. This period is particularly important, of course, where annual crops are concerned but it certainly does not cover all the significant adjustments of supply that may take place, and care must be taken, therefore, not to overstrain the meaning of curves derived in this way. Schultz's[13] suggestion that "the critical time period" should be determined pragmatically by trying out various lags and selecting the one which yields the highest correlation coefficient does not provide an escape from the particular difficulties that we are here discussing. We should also recognize that wherever the data used in deriving the curves are corrected for trend this seems to imply in a similar way a disregard for the more gradual changes that are associated with the variations in the scale of production.

The curves derived by Leontief are the most difficult to in-

[10] M. B. J. Ezekiel, Farmers' Response to Price in the Production of Market Milk, preliminary report of the Bureau of Agricultural Economics (1932).

[11] L. H. Bean, The Farmers' Response to Price, JOURNAL OF FARM ECONOMICS (1929) pp. 368-385.

[12] A Moving Equilibrium of Demand and Supply, *Quarterly Journal of Economics* (1925) p. 357; or *Synthetic Economics* (1929).

[13] *Op. cit.* p. 132.

terpret. Since they are obtaind from data relating to prices and quantities concurrently associated in the market no particular time-character seems to be implied. On the other hand, as we have seen above, although it may be reasonable to assume that each price observation corresponds to a point on *the* demand curve we cannot say that it represents a point on *the* supply curve. Who can tell which of our fan-like system of supply curves was concerned in establishing the price in any particular instance? The only solution seems to be to regard the curve obtained as an average of some sort representing a group of unknown curves of various time-characters and slopes. If these unknown curves all resemble each other closely the average may be typical and significant but if they happen to be divergent, as they well may be, it is difficult to see exactly what meaning it could have.

In the foregoing discussion we have concerned ourselves only with the increase of supply in response to an increase of demand. When we go on to consider the contraction of supply further complications are immediately introduced. The process of contraction is not an exact reversal of the process of expansion and the supply curve is commonly a one-way curve.[14] Just because a given increase in price called forth a given increase in supply it does not follow that a decrease in price of the same amount would restore the output to its former level. This certainly would not be likely to happen within the same length of time. When production is once established on a particular level there are forces of economic inertia which tend to maintain it there at least for a time. Capital once fixed in a specialized form cannot quickly be withdrawn, and entrepreneurs committed to a particular line of production will commonly continue to produce even when the price they receive does little more than cover the direct costs of operation. If the producers have alternative products to which they can turn, or if they are sufficiently conscious of their common interests to restrain production "for fear of spoiling the market", the supply will be more sensitive to price declines but even in these circumstances there is no reason to suppose that the process of contraction will be an exact reversal of the process of expansion. It seems to me, therefore, that each supply curve must be regarded as relating to an established level of output and should be recognized to have two distinct parts, one representing expansion beyond that output and the other representing contraction below it.

[14] This point has been discussed by G. A. Shepherd in his article, "The Burden of Increased Costs of Distribution," in the JOURNAL OF FARM ECONOMICS, October, 1932.

The statistical curves that have been derived do commonly relate to variations from some normal output but in many cases the fitting of a mathematical curve seems to imply that only a single set of forces is concerned in the adjustment of supply. In those cases where a straight line is fitted on a double logarithmic chart it is further implied that the elasticity of supply is actually the same for all movements great or small in either direction. A line of this sort may be said to represent the *average* elasticity of supply for the commodity concerned but in dealing with practical problems it may often be more important to know the exact elasticity of the particular part of the supply curve that is related to the matter in hand. If we are concerned with expansion we will want to know the elasticity of the upper part of the curve and if we are concerned with contraction we will want to know the elasticity of the lower part. The one will not be the same as the other and neither will be the same as the average for the curve as a whole. More statistical work might well be directed specifically to the study and comparison of the elasticities of expansion and the elasticities of contraction for different types of commodities.

Two points of less importance may now be touched on briefly. It may well be objected to all these studies that neither the price at the beginning of the production period nor the price at the end of it can properly be regarded as the *supply price* of the commodity in question. The former of these prices can have nothing to do with profit of subsequent production and the latter is undetermined at the time when the production is initiated. How then can either be the price which "motivates" production? The theoretical supply price is strictly defined as that price "the *expectation* of which would *call forth* a given supply." As a matter of fact, however, since we are dealing not with the economic men of theory but with the American farmers of everyday life, there is probably no price more important in determining responses than the price at the beginning of the production period. This is particularly true where annual crops are concerned. Not only does this price have an unconscious influence on everyone's expectations for the following year but it has also a direct effect on the profits of the enterprise for the year just past, which in their turn affect both the willingness and the ability of farmers to maintain or expand their production of the particular commodity concerned. The use of past prices in calculating the responsiveness of supply, although not strictly in accord with the

theoretical definition of supply price, ought, in fact, to yield results that are none the less significant.

Difficulties of a somewhat similar nature arise in connection with the measurement of supply responses wherever field crops are concerned. Weather cannot be said to respond to price and yet the total supply actually forthcoming depends as much upon this factor as upon the intentions of the producers. That being so it is generally agreed that acreage should be used instead of output as a measure of production response. It is undoubtedly a better index of the producers' reactions to the price situation but it is by no means a perfect one. In the first place it is itself affected to some extent by the weather conditions at planting time. Moreover it gives no indication of the response that is made through increased or decreased intensity of cultivation. Some refinements in the statistical methods used, however, may go a long way to overcome these defects. Allowances have been made in some studies for the influence of weather on acreage and it seems probable that a careful analysis of farm-management records would throw considerable light upon the cultivation responses that take place.

Finally it may be asked how far in these statistical supply curves the theoretical condition is satisfied that other things should remain equal while price changes are producing their effects on supply. Although these studies have been directed towards practical objectives rather than towards the exemplification of theory they may yield curves that satisfy approximately this particular condition. Certain of the disturbing factors such as natural growth or the gradual improvement of technique are taken care of by making corrections for trend or by introducing time as one of the factors in a multiple correlation analysis. More erratic changes of a minor character are averaged out in the ordinary process of curve fitting. The most important disturbing factors such as the prices of alternative crops or the prices of feed stuffs are generally given explicit recognition in the price ratios that are used. If we suppose that the changes in these ratios are brought about solely by changes in the price of the product with which we are dealing then the curve representing the responses made would correspond very closely in its essential nature to the supply curve of theory. Where more elaborate methods of multiple correlation are used it is possible in a similar way to derive a curve that represents in isolation the relationship between the single

pair of factors price and quantity.[15] There may be some doubt about the accuracy with which the effects of the different factors can be separately measured by any of our statistical devices but in as far as this is successfully accomplished we do obtain results that are logically consistent with the statical concepts of theory.

In conclusion it is plain that the analysis of supply is more complicated and difficult than the analysis of demand. It is also plain that the difficulties encountered are not peculiar to the empirical approach. They are theoretical rather than statistical. The idea of a supply curve is not as neat or as simple a concept as the idea of a demand curve. It may, however, be equally useful when handled with the proper care and understanding. It is particularly important that we should keep in mind constantly the nature of the economic relationships that are represented by our curves and especially the two things that have been stressed in this present paper:

First, *the time-character of the supply curve,* i.e. the dependence of the responses made upon the period allowed for the adjustments to take place.

Second, *the one-way nature of the supply-curve,* i.e. the fact that the process of contraction is not an exact reversal of the process of expansion and consequently the elasticities for the upward movement and the downward movement may be entirely different.

[15] See Ezekiel, Farmers' Response to Price in the Production of Market Milk, p. 11.

NOTES

COLLEGIATE MATHEMATICS NEEDED IN THE SOCIAL SCIENCES[1]

(A report prepared for the Social Science Research Council by a Committee consisting of H. R. Tolley, Director of the Giannini Foundation of Agricultural Economics, University of California; F. L. Griffin, Professor of Mathematics, Reed College; Holbrook Working, Economist of the Food Research Institute, Leland Stanford University; Charles H. Titus, Professor of Political Science, University of California at Los Angeles; and Mordecai Ezekiel, Assistant Chief Economist, the Federal Farm Board; and submitted to the Advisory Committee on Social and Economic Research in Agriculture.)

The background and purpose of this report are indicated by parts of the letter which Professor E. B. Wilson, President of the Social Science Research Council in June, 1930, sent to Professor Tolley informing him of the appointment of the committee and its duties.

"You are of course aware of the request by the Advisory Committee on Social and Economic Research in Agriculture for the appointment of a committee of this Council on mathematics to determine what mathematics should be taught to students of the social sciences. . . . The Committee on Problems and Policy in thinking the matter over decided that the time was not ripe for the appointment of a national committee but decided to appoint a sub-committee of the Advisory Committee on Agriculture which . . . should make a preliminary report on the subject. The only way I see of making progress is for the social scientists to know what they want, to explain to the mathematicians the types of problem they have to solve and the kind of mathematics they do use so that the mathematicians on the committee may orient their thinking on a basis of reality."

Although the appointment of this Committee was the outgrowth of discussions in the Advisory Committee on Economic and Social Research in Agriculture concerning graduate training for students in Agricultural Economics and Rural Sociology, the Committee is of the opinion that the needs of students in Agricultural Economics and Rural Sociology for training in collegiate mathematics are not essentially different from the needs of students who specialize in other branches of economics and sociology, and that all students of the social sciences would find some work in collegiate mathematics very helpful. Hence the needs of all students of the social sciences, insofar as they are known to the committee, have been considered. Training in mathematics will be most helpful if obtained prior to courses in statistics and other subjects, in which mathematical terms, concepts, and methods are or may be used. Hence the committee feels that students should plan, wherever possible, to obtain most if not all of their college training in mathematics in the early years of undergraduate work.

Since the committee was requested "to determine what mathematics should be taught to students of the social sciences," they considered the desirability of recommending certain courses to be required of all stu-

[1] This report was read at Farm Economics luncheon held during the Twenty-third Annual Meeting of the Association, Cincinnati, Ohio, December 30, 1932. It was submitted to the Advisory Committee on Social and Economic Research in Agriculture on December 5, 1931.

dents of the social sciences or possibly alternative courses to be required of different classes of students. However, after careful consideration, the committee reached the conclusion that such recommendations could be made only in very restricted form because for some social science students there is a fair question whether substantial direct benefit would be realized from any college mathematics whatever. On the other hand some few students might profitably take even more mathematics than is involved in an ordinary undergraduate mathematics major. There is need in nearly every institution doing graduate teaching or research in the social sciences for at least one staff member actively engaged in social science work whose mathematical and statistical training is the equivalent of what might be required for a Doctor of Philosophy degree in mathematics and statistics.

In framing any general requirement for mathematics courses, it must be remembered that in the early stages of the undergraduate career—when the training in mathematics should be obtained—it is rarely possible for the student to judge whether his subsequent study and work will call for much or little mathematics. The committee believes, however, that a knowledge of the phases of collegiate mathematics listed below would be helpful and useful to a large proportion of the students in economics, and that many students in other social sciences would find it worth while to obtain the knowledge and training that can be acquired through the study of these phases of mathematics, providing it can be done without taking too much time from the study of other subjects. The topics suggested are listed here by their usual mathematical names. The list is followed by a brief comment upon some of the social science objectives sought through the study of the topics. There is no significance in the order or grouping; various groups might well be separated and rearranged in laying out a systematic course.

(1) *Logarithms.* Common logarithms; numerical computation; compound interest and annuities; Napierian logarithms.

(2) *Graphs* (as a tool in the study of tabulated data). Plotting on ordinary and logarithmic papers; measurement of slopes and areas; graphical determination of maxima and minima; mean values; representation of three-variable relationships by means of three-dimensional diagrams and contours.

(3) *Interpolation.* By reading ordinary or logarithmic graphs; by proportional parts; by successive differences.

(4) *Equations and forms of curves.* Basic mathematical functions, their graphs, and the characteristic properties of the variations represented; straight lines; parabolic and hyperbolic curves; exponential and logarithmic curves; logistic curves; sine and cosine curves.

(5) *Probability.* Combinations, binomial theorem, elementary probability; the normal probability curve—its form, table, and equation; probability and frequency distributions; probability and time series.

(6) *Elements of differential and integral calculus.* The significance of a derivative as a limit, as a rate or slope, as a frequency, etc., the differential as an approximate increment; formulas for differentiating elementary mathematical functions, as u^n, a^u, $\log u$, $\sin u$, $\cos u$, uv, $\frac{u}{v}$;

partial differentiation: procedure for determining maximum and minimum values; integration as the reverse of differentiation; relation between integration and summation; multiple integration.

(7) *Curve fitting* (mathematical principles). Plotting tabulated values, their logarithms, reciprocals, etc., to ascertain whether the tabulated points lie on a curve of simple form; determination of the curve through such points, or selected points within the scatter-diagram or chart; the method of least squares or other methods for obtaining the constants of curves of best fit.

In organizing a course or courses embracing these topics, *illustrative material from the social sciences should be used freely, and the concepts and processes should be presented in such a manner as to make clear their application in the social sciences.* Special effort should be made to give the student an insight into the significance of mathematical ideas and processes, and to their applicability or non-applicability in the study of problems in the social sciences; to acquaint him with mathematical expression and reasoning as a mode of thought; and to cultivate a critical attitude in scrutinizing assumptions and the uses made of assumptions.

In suggesting topics to be covered in a specially organized course or courses the committee has attempted to select those topics having the greatest significance and earliest utility for students in the social sciences. The work with logarithms would not only facilitate numerical calculations in general, but would also enable students to understand financial mathematics as in funding debts, etc., and serve as a basis for understanding various exponential curves, probability, etc.—as well as logarithmic plotting systems connected with studies of percentage rates of growth (of population, etc.). Graphical representation of tabulated data and of mathematical functions besides being basic for statistical analysis, facilitates the understanding of economic variables and relationships (e.g. supply and demand curves, and records of prices; rates of change and cumulative effects; average of a changing quantity like the national debt or volume of unemployment, or mortality rates, etc.). Interpolation problems are well-nigh universal.

The study of the equations and forms of curves should make the student sufficiently familiar with the forms and characteristics of the simpler curves to enable him to recognize in many cases the type of curve suitable for fitting to a given body of data, and to appreciate the principal implications involved in the use of such a curve. The student should become familiar with types of cyclical and undulatory movements, with common approximations to trends and growth curves (for prices, populations, political institutions, etc.), and with varieties of theoretical demand curves, unit-cost curves, etc. The work in probability, besides affording a basis for statistical study in curve fitting and studies of distributions and variability (e.g., of scores in tests, of incomes, divorces at various ages, degrees of radicalism in political opinion, etc.), would assist in understanding contingent values in finance and in risks generally.

The elementary work in calculus would enable students to understand the relations between marginal and total utility, rates and cumulative growth, frequency and cumulative frequency, etc., the conditions for a maximum (e.g., profit); the change in one quantity due to slight changes

in several others upon which it depends (say, the size of the crop from a certain field, as affected by slight changes in rainfall, fertilizer input, temperature, cultivation, etc.); concepts like the elasticity of demand; partial and multiple correlation procedures, curve fitting with normal equations, etc. It would also enable students to follow many of the discussions in the literature where the symbols and concepts of differentiation and integration are employed.

The present organization and arrangement of the courses in many colleges and universities is such that 15 to 20 semester hours of mathematics must be taken in order to obtain a knowledge of the above topics. Further, the courses are usually taught without any reference to the application of the mathematical concepts and terms to problems in the social sciences. Under these circumstances comparatively few students in any of the social sciences feel justified in spending the time required to take these courses. In the judgment of the committee, the advantage of mathematical training to the majority of undergraduate majors in economics (the social science discipline in which mathematical training now appears to be most useful) is not sufficient to warrant the displacement of 15 to 20 semester hours of other work, wisely chosen, by that amount of mathematics lacking definite correlation with social science.

The committee is of the opinion that, if the mathematics courses be properly organized, the topics listed above can be taught to students who have had only ordinary high school mathematics in a form readily grasped by them and full of significance to them; also, that this can be done, with opportunity for ample practice, in a three-hour course running through two, or at most three semesters. Students who desire even more practice in manipulation could be permitted to register for an extra "hour" or "unit" of such work parelleling the course.

As will be discussed presently, some students specializing in social science will need a considerably more extensive knowledge of mathematics than is obtainable from the foregoing course. They can, however, use this first course as a foundation for more advanced courses, and go as far as their special needs dictate. From the experience of various colleges with higher courses based upon a unified first course of somewhat similar character, it appears likely that it would be possible to cover by the end of the second year all the topics and technique of the ordinary calculus that are of importance to social scientists, and also to introduce some ideas usually postponed to a course in Advanced Calculus.

The training in such mathematics courses would help the student to acquire facility in reducing to definite terms the concepts and relationships encountered in the courses in the social sciences and to do clear and logical thinking and reasoning.

This opinion is based on the experience of members of the committee in teaching mathematics, as such, and in teaching advanced courses in statistics to students who required to be taught a substantial amount of this mathematics along with the statistics, and on reports of experience with courses designed for this purpose in a number of colleges and universities.

In view of all these considerations, the committee feels that if a specially organized course such as suggested above were available, many

students in the social sciences would find it worth their while to take it. The committee has no hesitancy in recommending that this amount of mathematics should, if available, be fairly generally required of students specializing in economics and in some others of the social sciences. However, since only economists, political scientists, and mathematicians were represented on the committee, we feel that representatives of other social sciences should be asked to give further consideration to this point.

Such training would prove of immediate benefit to students in subsequent courses in statistics and for economics students in finance and in economic theory, if the subsequent courses presupposed a knowledge of mathematics and took advantage of that preliminary training. A substantial percentage of social science students would find further direct benefit from such a course amply repaying them for the time spent. Even those students who failed to realize direct benefit from the mathematical training in subsequent study and work would usually find the cultural and general educational value of such a course equal to that which might have been derived from an equivalent amount of time devoted to alternative subjects not directly related to their principal line of interest.

It should be said that the success of any such course in meeting the need we envisage must depend upon the knowledge and ability of the instructor as much as upon the choice of topics for instruction. The instructor must possess the understanding of mathematics necessary to carry the students beyond the mechanics of formal mathematical processes to an understanding of the concepts involved, and must also possess the knowledge of social sciences to enable him not only to provide illustrations of uses of the mathematical methods in the social sciences, as well as in other sciences, but also to relate the mathematical concepts to concepts employed in the social sciences.

Preparation for Courses in Statistics.—Mathematics courses covering the above topics would be very helpful as a preliminary to a first course in statistics. The second encounter with the mathematical terms and concepts when taking courses in statistics will serve to give a more comprehending grasp than would be possible with a single encounter. Moreover, with such mathematical preparation the student in the statistics course would be released from spending time in learning the mathematical topics *de novo,* and from distractions of attention incident upon such digressions. The statistics course could then utilize the usual amount of time to carry the student much farther in the knowledge of statistical methods, their possibilities and limitations; or the customary ground could be covered in a much shorter time.

Preparation for the Study of Economic Theory.—Training in mathematics is useful to those who take undergraduate courses in economic theory in that it facilitates rapid and sound reasoning on many problems encountered in these courses. Many phases of economic theory, which seem quite involved and difficult to one who has not been trained to think in terms of equations, graphs, and small differences, can be stated quite simply in mathematical terms and are easily understood by one who is able to grasp the meaning and significance of those terms.

Despite these advantages few instructors in economic theory have felt justified in urging their students to take the courses in mathematics,

as customarily offered (trigonometry, college algebra, analytical geometry, and calculus), which require some 15 to 20 semester hours of work. But the availability of briefer courses including mathematics of principal use in the study of economic theory and omitting unnecessary technique and complications would go far toward swinging the balance of judgment to the other side.

Although some of the topics that would be covered have little direct application in the study of those phases of economic theory usually covered in undergraduate courses, most students who specialize in economics take a course or courses in statistics as well as in economic theory, and the committee is of the opinion that such students would be amply repaid for the time spent in taking a mathematics course such as this outlined above.

Preparation for Research and Teaching in the Social Sciences.—After obtaining the bachelors degree, a large majority of students who specialize in the social sciences now enter upon business careers or into other lines of work in which they find little direct use for the knowledge that can be gained in courses in collegiate mathematics. The inclusion of mathematics in the course of study of such students must be justified on the basis of the cultural training and mental discipline obtained and on the basis of the usefulness of mathematical concepts and methods in other courses, such as economic theory, statistics and accounting.

With the student who expects to become a professional social scientist, however, the situation is very different. The student who expects to become an instructor or investigator will usually spend two or more years in graduate work to obtain additional training in his chosen field. In this time, he will endeavor to prepare himself to teach his subject to both undergraduate and graduate students, to carry on independent research, to make contributions to knowledge in his field, and to read and understand the contributions of his colleagues.

Students preparing to become instructors in economic theory or to do research in a field requiring a comprehensive knowledge of economic theory will find much more direct use for a knowledge of mathematics than will most of those whose collegiate training is limited to undergraduate study. In particular, it will make available the writings of mathematical economists and enable one to understand and evaluate the work of statistical analysts. Ordinarily, such students would do well to consider that it is essential to have mathematical equipment, at least equal to that which would be obtained in the brief courses suggested for undergraduates, and plan to obtain this equipment as part of their formal training, even if it must be done in connection with their graduate study.

The student who expects to become a statistical analyst should have a thorough grasp of statistical theory and its mathematical background. In the analysis of social statistics, acquaintance with the fundamentals of statistical theory is essential in order to devise and apply sound methods and to avoid faulty and fallacious analysis and interpretation of results. This implies the ability to read and understand the literature of statistical theory and method and to modify established methods or develop new ones in problems to which existing methods are not exactly

applicable. A thorough acquaintance with differential and integral calculus and the theory of probability and an ability to handle abstract problems in these fields are necessary for work of this character. For a student who is looking forward to a career as a statistical analyst, training in mathematics considerably broader than can be obtained in the abbreviated course outlined above, will be very helpful.

Similarly those who expect to follow the writings of the mathematical economists or to make contributions to theory in those branches of economics in which mathematical concepts and methods are used must have a broad training in mathematics. Anthropologists who expect to deal with biometric problems, and psychologists who expect to work in psychophysics need a thorough knowledge of calculus and the theory of probability.

On the other hand, among those who are now doing research and teaching in the social sciences, there are undoubtedly many who have found little or no direct use for training in collegiate mathematics. Such is probably the case for most historians and for many sociologists, political scientists, and psychologists. It is possible that as further developments occur in the theory and research method of these disciplines, greater need for the general use of mathematical concepts and methods will become apparent, as has been the case in many of the natural and biological sciences and, more recently, in statistical analysis and economic theory. A social scientist should not be mystified by the appearance of a mathematical symbol or equation on the page of an article or in a text book, no matter in which of the disciplines he is primarily interested.

In view of all these considerations, the committee feels that a student who is planning to become a professional worker in any of the social science disciplines would be well repaid for the time and effort spent in taking six to nine semester hours of collegiate mathematics, provided the courses were so organized that the phases of mathematics mentioned in the first part of this report could be covered in that time. Some would find it worth while to take also a second year course, or even the more extended courses in all these phases (even though they should require fifteen to twenty hours) if specially organized courses are not available.

The committee is cognizant of the fact that at present most of the graduate students in the social sciences have had no courses whatever in collegiate mathematics, but believed that many of these will find it worth while to make up their deficiencies even after beginning their graduate work. If abbreviated courses as outlined herein are available, those may be taken, along with more advanced courses which the student finds would be valuable to him. Some graduate students would, no doubt, be justified in adding a higher course, or in taking enough of the more extended courses ordinarily offered in mathematics to acquire an understanding of the differential and integral calculus and the mathematical theory of probability.

Mathematics "Requirements" in Social Science Curricula.—Whether in any one of the social sciences, all students or only certain more or less restricted groups should be *required* to take courses in collegiate mathematics such as are suggested in this report, must depend to a considerable degree upon the degree of confidence with which need or lack

of need for mathematical training can be predicted, upon the subjects which would be displaced if mathematics were required, and upon other circumstances which will differ as between disciplines within the social sciences and as between institutions.

The committee believes that at institutions where mathematics courses are available, in which students can obtain a knowledge of the fundamental concepts of differential and integral calculus and the elements of probability, with the necessary preliminary training, in a total of six to nine semester hours as in the special courses outlined, these courses should be made prerequisite to any course in statistics and to upper division courses in economic theory, and the courses in statistics and economic theory organized so as to take advantage of the knowledge gained in the mathematics courses. Perhaps certain other courses in economics, and in the other disciplines as well, would on further consideration be included in the group for which the mathematics courses should be prerequisite.

In closing, the committee suggests (1) that further study of the problem with particular reference to the specific needs of the different social sciences and the coordination between courses in mathematics and the different social science disciplines is highly desirable, and (2) that interested institutions be encouraged to proceed with the development of courses in mathematics designed primarily to meet the needs of students in the social sciences.

COMPARATIVE COST OF FOOD AT FARM AND CITY PRICES

Recent studies of farm standards of living have raised the question of the prices at which food products furnished by the farm should be figured to arrive at the cost of goods and services consumed annually. Most workers have charged these products at farm prices (what they would have brought if sold) on the assumption that this procedure represents actual costs more nearly than does city prices. The workers admit that to use city prices would mean higher costs generally, with some allowance for the fewer products that would be used if they had to be purchased at city prices.

Just what would be the difference in the cost of foods for these studies if all foods were charged at city prices? What change would this make in the total cost of living? How would it affect the percentage distribution of the principal groups of goods and services in the living and the proportions of the total living furnished by the farm and purchased?

An attempt was made to throw some light on these questions in connection with a study of rural standards of living in Dane County, Wisconsin.[1] Information was gathered by the survey method from 150 farm families chosen at random in two townships, six to twelve miles from Stoughton, a city of approximately 5000 population, during the spring of 1930.

The cost of furnished foods charged at farm prices averaged $177 for

[1] Rural Standards of Living in Dane and Green Counties. Stencil Bulletin 106 University of Wisconsin Agricultural Extension Service 1931. Report of one unit of study made by the departments of Rural Sociology, Agricultural Economics, and Home Economics, in cooperation with the U. S. Bureau of Agricultural Economics.

the 150 families (table 1). This represents 36 per cent of the cost of all food, $516, and 10.9 per cent of the total cost of living, $1629.

With the furnished foods charged at farm prices, the cost of all food is 31.7 per cent of the total cost of living. This is noticeably higher than the percentage of the total cost for any other single group of goods; almost twice as high as the percentage for rent and more than twice as high as the percentage for clothing. The proportion of the total cost of living furnished by the farm amounts to 30.1 per cent on this basis.

For purposes of comparison the food products furnished by the farm were charged at retail prices in Stoughton at the time of the study, 1929-1930. The original prices of purchased food were used since they represented retail prices in the city.

In the procedure an effort was made to find prices equivalent to those paid by the average city housewife who buys her food in small quantities as she needs it rather than in quantity lots. This tends to make the final cost still higher for such items as dry onions, where the housewife buys 10 or 15 cents worth at a time. The farm price charged dry onions at $2.00 a bushel. The city price charged them much higher, probably $4.00 per bushel, owing to the fact that the city housewife buys onions a few pounds at a time on a city retail market. This explains some of the difference between costs based on farm and city prices.

The cost of furnished foods at the city prices averaged $298 per family (table 1). This is 68 per cent higher than the corresponding cost at farm prices. It represents 47 per cent of the cost of all food, $637, and 17 per cent of the total cost of living, $1750.

With the furnished food charged at city prices, the cost of all food is 36.4 per cent of the total cost of living. This is more than twice as high as the percentage of the total cost for rent and nearly three times as high as the percentage for clothing. The proportion of the total cost of living furnished by the farm amounts to 34.9 per cent on the city-price-of-foods basis, almost 5 per cent higher than on the other basis.

The average size of family; that is, operators, homemakers and sons and daughters at home, was 4.4 persons. With relatives, hired helpers and boarders included, it was larger, 5.2 persons. The net cash family income for the year of study averaged $1101 for the 150 families.

Comparisons with similar results are limited to two studies made in Ohio by the household accounting method.[2] One of these studies dealt with 26 families and the other with 187 families thought to rank "above the average for Ohio families." Apparently the 26 families of the one study are included in the 187 families of the other study.[3]

From the first study one may ascertain the increase in the cost of food when furnished foods are charged at Columbus retail prices rather than farm prices, $138 per family or 34 per cent. The average figures are $400 in the former case and $538 in the latter case.

The other study shows the comparative figures. Furnished foods costing $264, when charged at farm prices, cost $433 when charged at city retail prices. This represents an increase of 64 per cent, which is practically the same as for the Dane County study.

[2] C. E. Lively. Cost of Family Living on the Farm, Mimeo. Report, Ohio State Univ. and Bul. 468, Ohio Agr. Expt. Sta. 1930.

[3] Actually 117 families but 187 family records due to the fact that some of the families kept records for more than one year.

The results here presented emphasize the need for further comparative studies. Attention needs to be directed also to fuel and housing furnished by the farm. The cost of fuel, amounting to only $22 per year for the Dane County families, may be expected to bear about the same relation to the city price fuel cost as the farm-price-of-food cost does to the city-price-of-food cost. The situation may be quite different, however, with respect to housing. Farm houses are extremely difficult to evaluate in their actual locations and settings and even more so when one attempts to guess what they would bring in the way of rent if they were in cities.

TABLE 1.—THE AVERAGE COST OF LIVING AND THE DISTRIBUTION OF THIS COST AMONG THE PRINCIPAL GROUPS OF GOODS AND SERVICES, WITH FURNISHED FOODS CHARGED AT FARM AND CITY PRICES; 150 FARM FAMILIES OF DANE COUNTY, WISCONSIN, FOR YEAR ENDING APRIL 30, 1930.

Principal kinds of goods and services	With food charged at farm prices		With food charged at city prices	
	Dollars	Per cent of total	Dollars	Per cent of total
All goods and services (total cost)	1629	100.0	1750	100.0
Furnished by farm	490	30.1	611	34.9
Purchased	1139	69.9	1139	65.1
Food (total cost)	516	31.7	637	36.4
Furnished by farm	177	10.9	298	17.0
Purchased	339	20.8	339	19.4
Clothing	244	15.0	244	13.9
Rent (10 percent of value of house)	291	17.8	291	16.6
Furnishings	67	4.1	67	3.8
Household operation	233	14.3	233	13.4
Furnished by farm (fuel)	22	1.4	22	1.3
Purchased (including fuel, $79)	211	12.9	211	12.0
Maintenance of health	87	5.4	87	4.9
Advancement	108	6.6	108	6.2
Personal	52	3.2	52	3.2
Insurance, life and health	31	1.9	31	1.8

The sharp reversal in farm and city wage and unemployment situations during the past three years seem to be accompanied by an intense interest in the comparative cost of living in the country and city. Additional information is needed to give further light on the question and the difference in cost due to variations in prices between farm and specific city locations must be taken into account.

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MARKETING ATTITUDES OF LARGE-SCALE WHEAT PRODUCERS OF KANSAS

The marketing of grain cooperatively by farmers in Kansas is a common practice and extends to all parts of the state. Since volume of business is a major factor in the success of all cooperative marketing agencies, an important problem of cooperative marketing groups of all farm commodities is to secure the patronage of the large producers. One result of a successful year in a cooperative marketing organization frequently is the paying of dividends to members on a patronage basis.

This fact may be an inducement to large producers to become members that they may receive a greater return from the product they have to market.

The question of membership of large-scale wheat producers in cooperative marketing organizations was the primary purpose of a study recently made in two areas of Kansas to determine the attitude of a large number of these growers toward the cooperative marketing of wheat. A secondary part of the study was a comparison of the relationship of the quantity and location of grain storage facilities owned by cooperatives to the marketing attitude of producers in that area.

Information was secured by questionnaire from large wheat producers in 26 counties of the state. These counties are in two groups of 13 each. One area includes the counties of Finney, Ford, Grant, Gray, Hamilton, Haskell, Hodgeman, Kearney, Meade, Morton, Seward, Stanton, and Stevens in the southwest corner of the state where the majority of the wheat produced goes by rail through Dodge City. The other area includes the counties of Ellis, Ellsworth, Gove, Graham, Lincoln, Logan, Osborne, Rooks, Russell, Saline, Sheridan, Trego, and Wallace where railway lines bring most of the wheat through Salina.

One of the most interesting findings of the study is that a small per cent of farmers in some of the counties were growing up to 40 per cent of the wheat in those counties. In the southwest group of counties 10.8 per cent of the farmers, 802 in number, grew 34.7 per cent of the wheat in 1929. Even in counties with two hundred thousand acres or more in wheat, from 12 to 16 per cent of the farmers were growing one-third of the wheat. In the northern group of counties 33.8 per cent of the wheat was grown by 12 per cent of the farmers, 1682 in number.

The questions asked of these growers of large acreages of wheat in the 26 counties were four in number: (1) Do you belong to a cooperative marketing organization? (2) If not a member, do you have any special reason for not being a member? (3) If not a member, what type of a marketing agency would you think most beneficial to farmers in your community? (4) In what ways do you think cooperative marketing agencies could be of greater service to wheat producers in your county?

Replies to this questionnaire indicated that a much larger per cent of the large producers in the southwest area belong to cooperative marketing organizations than in the northern group of counties. This situation may be due to the more extensive grain farming, a difference in the type of farmers, and more active cooperative leaders in the southwest area.

A majority of the non-members indicated that they have no particular aversion to cooperative marketing. Many of them, 29.3 per cent, gave no reason for non-membership. Many others, 22.3 per cent, showed a lack of confidence in the management of the locals with which they were familiar rather than in the system of cooperative marketing, and to 5.1 per cent no local organization was available.

As to the type of marketing agency preferred, 15.9 per cent of the non-members favored one large cooperative of national size. An equal number favored the old system of private grain dealers and independent sale, and 10.8 per cent of them favored a governmental or state agency with a fixed or regulated price. Nearly one-half of the non-members indicated no preference as to type, or made no reply to his question.

This would suggest no generally preferred system of marketing among large producers who are not members of cooperative marketing agencies. This lack of unity of desire as to type of agency and the absence of definite reasons for non-membership suggest great possibilities of development of cooperative marketing among the large wheat producers of Kansas if more definitely planned organization work were to be done in these areas. More of the uncertainty and lack of confidence in cooperative marketing appears to be among the farmers in the northern area.

There is a great difference of opinion among the larger producers as to the ways in which cooperative marketing agencies could be of greater service to wheat growers in Kansas. The plan most favored was for the development of a central marketing agency large enough to handle all the wheat instead of the several agencies now functioning. Some such suggestion was made by 19.7 per cent of all those returning the questionnaire. This group included 23 per cent of all members and 14.7 per cent of all non-members who replied. Other suggestions made by significant percentages were: better management of existing cooperatives; some sort of government control; to enlarge the business of cooperatives to include the handling of farm supplies; the establishment of a finance or credit system to enable the farmer to hold his wheat over periods of low prices; and the building of more storage facilities by cooperatives. The remainder of the suggestions for better service were of various sorts and made by only a few producers. Most of them included either some form of price regulation, control of production and marketing by the government, elimination of the board of trade, a contract marketing plan, the equalization of costs of farm supplies and freight rates with prices for farm products or some detailed plan the producer had thought out.

Statements obtained from officials of some of the regional marketing associations were to the effect that while the large wheat producer, naturally independent and feeling himself capable of marketing his own grain, has not felt it necessary or to his advantage in the past to cooperate with his neighbors in this manner, he is more readily joining cooperative marketing groups in recent years. If this condition exists, as 401 replies from these producers also seem to indicate, it appears that cooperative marketing of wheat through one central marketing agency would meet the approval of the majority of the large producers of Kansas were it conducted on strictly business principles so farmers could share in profits made from the terminal handling of grain. Such an agency would, in all probability receive the support of most of the larger producers as soon as they were assured of its efficiency and its control of facilities to handle their grains successfully.

Studies of the relationship of storage facilities of cooperatives to membership of large producers in the cooperative revealed that as a rule in the area where there is greater support of cooperative organizations by large growers, the percentage of storage controlled by cooperatives is also large.

These investigations showed that large producers of wheat were more likely to join their local cooperative association if it controlled an adequate percentage of the local storage.

Cooperatives in the southwest area owned 32.3 per cent of the storage in that area in 1930. Seventy-two and four-tenths per cent of the questionnaires returned from this area were from members of cooperatives. In the northern area only 52.4 per cent of the replies were from members and cooperatives in that area controlled but 17.8 per cent of the storage in those counties.

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PROPORTION OF PRODUCTION ON AREAS OF HIGH AND LOW YIELD

The analysis of problems involving acreage changes would be facilitated by knowledge of the probable influence of such a change upon production. For example, it might be useful to know the probable effect on production of acreage reduction under some form of allotment, or the probable resulting change in production of the farmers change in acreage in response to price, or more particularly, the effect of retiring marginal or submarginal land. This would require a frequency showing the production on various amounts of acreage withdrawn or added under the particular stimulus in question. Data are not available to construct such a frequency.

A cumulative frequency of numbers of acres and corresponding production beginning with the areas of lowest yield would be suggestive in reaching a judgment on the problem, if used cautiously. In consequence, we have given below such a calculation for spring wheat, flax and winter wheat in two areas. The data are the production and acreage by counties in 1929 as given in the census of 1930. The method has been to compute the average yield for each county and accumulate the acreage and production beginning with the county of lowest yield. These accumulations have been expressed in percentages of the total for each state. There are two percentages computed for the area as a whole. The first is an average of the state percentages weighted by acreages in the included states. This average is particularly applicable to a discussion that involves a proportionate reduction in each state. The second percentage accumulates the production for the entire area similarly to the method of the individual state regardless of the location of the county.

The states of Minnesota, North Dakota, and South Dakota have been included in the flax area. As shown in Table 1, the ten per cent of the state's acreage lying in the counties of lowest yield, produced 5.5 per cent of the bushels in Minnesota and North Dakota and 4.5 per cent in South Dakota. The average for the three states was 5.2 per cent, while the accumulation for the area regardless of county location was 4.5 per cent. Twenty per cent of the acreage produced 12.3, 12.0, and 10.0 per cent, respectively, while the average was 11.5 per cent, and the accumulation for the area was 10.0 per cent. On the other hand, the twenty per cent of the acreage lying in the counties of highest yield produced 28.5 per cent of the bushels in Minnesota, and North Dakota, and 31.7 per cent in South Dakota. The average for the area was 29.4 per cent and the accumulation 36.0 per cent.

The states which have been included in the spring wheat area are Minnesota, North Dakota, South Dakota and Montana. Montana, as shown in Table 2, produced, on the 20 per cent of its total acres lying in the counties

TABLE 1.—FLAX PRODUCTION CORRESPONDING TO STATED PERCENTAGES OF THE TOTAL FLAX ACREAGE OF MINNESOTA, NORTH DAKOTA, AND SOUTH DAKOTA IN 1929, CUMULATED BEGINNING WITH COUNTIES OF LOWEST YIELD.

Accumulation of acreage of lowest yield	Cumulative proportion of total production				
	Minnesota	North Dakota	South Dakota	Total of 3 states	Weighted av. of 3 states
(Per cent of total acreage)	Per cent	Per cent	Per cent	Per cent	Per cent
10	5.5	5.5	4.5	4.5	5.2
20	12.3	12.0	10.0	10.0	11.5
30	19.6	19.6	17.3	16.6	19.0
40	28.0	28.0	25.0	24.3	21.2
50	37.5	37.5	34.3	32.5	36.6
60	48.0	48.0	44.0	42.0	46.9
70	59.0	59.0	55.5	52.3	58.1
80	71.5	71.5	68.3	64.0	70.6
90	85.3	85.3	82.0	79.0	84.4
100	100.0	100.0	100.0	100.0	100.0

of lowest yield, only 12.5 per cent of its total crop. The figure for Minnesota is 15.0 per cent.

Two winter wheat areas have been considered. The first includes Kansas, Nebraska and Oklahoma, and is representative of the hard red winter wheat region. The second includes Missouri, Illinois, Indiana and Ohio and represents the semi-hard winter wheat region. In the hard red winter wheat area 13.8 per cent of the total wheat was produced on the 20 per cent of the acreage lying in the counties of lowest yield. (Table 3) In the semi-hard winter wheat area the figure was 12.0 per cent. The corresponding figure for the spring wheat area was 12.2 per cent. (Table 4) The difference between the hard winter wheat areas persists for all acreage classifications, the difference reaching a maximum at 50 per cent of the total acreage. The weighted averages for these areas, computed by weighting the percentages in the states by the respective acreages in those states, are virtually identical for all acreage classifications.

The above analysis can be considered only as an indication of the influence of the allotment plan on production. This plan provides that all farmers growing the crop in question shall reduce their acreage in like proportion. It is to be assumed that each farmer would reduce the acreage on that part of the farm which is least adaptable to the production of the crop. The analysis indicates that a 20 per cent reduction of spring wheat acreage in

TABLE 2.—SPRING WHEAT PRODUCTION CORRESPONDING TO STATED PERCENTAGES OF THE TOTAL SPRING ACREAGE OF MINNESOTA, NORTH DAKOTA, SOUTH DAKOTA, AND MONTANA IN 1929, CUMULATED BEGINNING WITH COUNTIES OF LOWEST YIELD.

Accumulation of acreage of lowest yield	Cumulative proportion of total production					
	Minnesota	North Dakota	South Dakota	Montana	Total of 4 states	Weighted av. of 4 states
(Per cent of total acreage)	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent
10	7.0	6.0	6.0	5.5	5.2	5.9
20	15.0	14.0	13.0	12.5	12.2	13.5
30	23.0	22.0	20.5	19.7	20.4	21.2
40	31.5	31.0	28.7	28.0	28.8	29.8
50	40.0	40.5	37.5	37.5	38.2	39.1
60	50.5	51.0	47.5	47.5	48.5	49.4
70	61.5	62.0	58.0	58.0	59.7	60.2
80	72.5	74.0	69.8	70.0	71.2	72.1
90	85.7	87.0	83.0	83.5	84.0	85.3
100	100.0	100.0	100.0	100.0	100.0	100.0

Minnesota would effect a 15.0 per cent decrease of production if the decrease occurred in counties of lowest yield. The validity of the use of the latter figure in estimating the effects of a 20 per cent reduction of spring wheat acreage on each farm in Minnesota depends on how closely the variation in yield on the individual farm corresponds to the variation within the state. The variation of yield on the individual farm probably is less than that in the state, in consequence, the amount of decrease is underestimated. The same limitations hold in applying the weighted average to the spring wheat area as a whole, and similarly to the results of studies relating the elasticity of acreage to resulting changes in production.

TABLE 3.—WINTER WHEAT PRODUCTION CORRESPONDING TO STATED PERCENTAGES OF THE TOTAL WINTER WHEAT ACREAGE OF KANSAS, NEBRASKA, AND OKLAHOMA IN 1929, CUMULATED BEGINNING WITH COUNTIES OF LOWEST YIELD.

Accumulation of acreage of lowest yield	Cumulative proportion of total production				
	Kansas	Nebraska	Oklahoma	Total of 3 states	Weighted av. of 3 states.
(Per cent of total acreage)	Per cent	Per cent	Per cent	Per cent	Per cent
10	6.0	7.5	7.5	6.5	6.6
20	13.0	16.0	15.5	13.8	14.1
30	20.5	24.5	24.0	22.2	22.0
40	30.5	33.5	32.5	31.0	31.5
50	40.5	43.0	43.0	40.5	41.5
60	51.0	53.0	52.6	50.7	51.7
70	61.5	63.0	63.3	61.3	62.2
80	72.5	74.5	74.5	73.8	73.3
90	85.5	86.5	87.5	85.5	86.1
100	100.0	100.0	100.0	100.0	100.0

In the examination of the problem of the removal of marginal and submarginal land from cultivation, the cumulative figure for the region is the better. Advocates of such reduction usually associate the land to be removed with the land of lowest yield. These data are very suggestive as to the results of such a program.

TABLE 4.—WINTER WHEAT PRODUCTION CORRESPONDING TO STATED PERCENTAGES OF THE TOTAL WINTER WHEAT ACREAGE OF MISSOURI, ILLINOIS, INDIANA AND OHIO IN 1929, CUMULATED BEGINNING WITH COUNTIES OF LOWEST YIELD.

Accumulation of acreage of lowest yield	Cumulative proportion of total production					
	Missouri	Illinois	Indiana	Ohio	Total of 4 states	Weighted av. of 4 states
(Per cent of total acreage)	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent
10	7.5	6.0	6.0	7.0	5.5	6.6
20	16.0	12.4	13.0	15.0	12.0	14.0
30	25.0	19.5	20.5	24.5	19.0	22.2
40	35.0	27.5	29.0	33.8	27.7	31.1
50	44.5	36.5	38.7	44.0	35.3	40.6
60	54.5	46.5	50.0	54.8	46.0	51.1
70	65.0	58.0	61.0	65.3	58.5	62.0
80	76.5	71.0	73.0	75.3	70.7	73.8
90	87.5	84.7	86.5	88.0	85.0	86.5
100	100.0	100.0	100.0	100.0	100.0	100.0

W. C. WAITE
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THE STRUGGLE AGAINST THE AGRICULTURAL CRISIS IN CZECHOSLOVAKIA

The special agricultural syndicates are the means used in fighting the agricultural crisis in Czechoslovakia at present. Last summer a syndicate to regulate the importation of cereals and milling products was organized. A syndicate for the regulation of the importation of cattle and their products is now being organized. The agricultural classes have been urging these syndicates during the past year. In November, 1931, the Cooperative Center for agricultural purchase and sale presented a memorandum to the Czechoslovakian government proposing a cooperative organization to regulate imports of cattle beginning with January, 1932. The question was deliberated by those interested and was considered by the government in July, 1932. Syndicates for cereals and cattle were considered but it was decided to organize the cereals syndicate and postpone the organization of the cattle syndicate until the results of the cereals syndicate were available.

The cereals syndicate rendered a great service to the agricultural classes. The importation of wheat was stopped and the importation of maize was materially checked. As a result, the demands for the cattle syndicate increased. The chaotic state of the authorizations for the importation of cattle products has increased the need for such a syndicate. The statute providing for the cattle syndicate has just been approved by the Council of Ministers. Three groups will be represented in the syndicate—producers, consumers, and tradesmen.

The agricultural group in the syndicate will be represented by the Centro-Cooperative as a central cooperative organization for purchase and sale and by the Agricultural Union as an organization of cattle producers. The new syndicate has the task of determining the quantities of cattle and cattle products to be imported. This will be determined in consideration of the state of the domestic market for the various products. The syndicate will have two divisions, one for the sale of cattle and beef products, the other for the sale of milk products and eggs.

The interested groups of producers, consumers, and tradesmen will be represented in Praesidium as well as in the sections. The syndicate has the right to require import duties, the amount of which will depend upon the state of the domestic market. The policy followed will attempt to maintain stable prices for domestically produced products. The syndicate has the right to demand that domestic products be used in preference to imports. The syndicate is controlled by the government by the side of Agriculture, Finances, Trade and Industry, Foreign Offices, and the Czechoslovakian National Bank.

S. Borodaewsky

Czechoslovakia

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BOOK REVIEWS

Farm and Village Housing, by John M. Gries and James Ford, General Editors. Washington: The President's Conference on Home Building and Home Ownership, 1932. xviii, 293 pp. $1.15.

Teachers of rural sociology and extension workers in the fields of agricultural engineering, home economics, and rural sociology have looked long for an adequate handbook on the housing of rural folk. When the President's Conference on Home Building and Home Ownership delegated to a large and distinguished committee the task of assembling the available information on Farm and Village Housing, there was hope that "A new day for rural housing" had dawned. That this hope will be realized is assured by the well-organized presentation of various aspects of the problem in the report of the committee. It is, however, to be regretted that "eight additional chapters and numerous illustrations" had to be omitted because of lack of adequate funds for publication.

Following a "Foreword" by Dr. Ray Lyman Wilbur, an "Introduction" by the joint editors of the series, John M. Gries and James Ford, and a "Preface" by Dean A. R. Mann, the chairman of the committee, the report proceeds under six main captions and three appendices to present its findings. Part I deals with Farm and Village Housing conditions. The first chapter prepared by E. L. Kirkpatrick and a subcommittee condenses into 15 pages a digest of some thirty or more bulletins on housing conditions in various sections of the country and summarizes a field study of 28 counties representing different types of farming areas. Information concerning 2162 farm houses and 600 village houses was obtained in this survey. Kirkpatrick concludes: "There is little apparent need for more space" but "there is need for better shelter" (in the wider sense of the word) "in all the sections studied; more urgent of course in some than in others." "Modern equipment and conveniences have received too little attention in all of the sections"; "Also there is a field for unlimited development from the aesthetic viewpoint in farm housing." Kirkpatrick strikes the keynote of the whole report when he says "The housing conditions of white farm families in the United States shown by this survey reveal a real need for the development and popularization of housing standards that are within the reach of different economic groups in the farm population, and of plans for achieving these standards." This is the sentiment also of the editorial introduction which expresses it thus: "In all of rural America a large part of the housing is needlessly substandard."

Chapter II is devoted to a comparison of the isolated farm homes of Utah farmers with the village homes of those who have maintained the group method of living. The inference is that the village-dwelling farmer is more community minded, more apt to take advantage of new developments. He has more conveniences in his home, and his wife has more leisure.

Chapter III deals with the housing of part-time farmers. Rozman shows that the improvement of housing conditions for this rapidly growing class is dependent upon three constructive measures: better credit facilities, reduction of costs through standardization, and an educational campaign.

Parts II and III of the report deal with the technical aspects of design, construction, beautification, and repair. These sections should be of especial value to the extension worker. One of the most interesting chapters in the whole report is the "Brief History of Rural Architecture in the United States." Helpful suggestions as to building, repairs, painting, and fire protection are given in chapters five to eleven. It is noteworthy, however, that there is no adequate treatment of the planning of efficient kitchens. This may be one of the eight omitted chapters but the editors committed an error of judgment when they permitted this important topic to be dismissed in less than half a page.

Chapter VII, Planning the Farmhouse, contents itself with platitudes and generalities and is suggestive of an introductory lecture to a freshman class in Home Economics. It might have been more to the point had it been written by some farm matron who had planned and managed a fairly efficient farm home. Surely there are many such in rural America.

Chapter IX suggests in its brief two pages a scheme for having the farmhouse grow with the growing income and the growing family.

The chapter on Farmstead Planning and Beautification reminds one of the Canadian Naturalist, Jack Miner, who plants his most beautiful flowers along the roadside to protect his house from the dust of the gravel highway. If asked to explain, Jack says, "Every driver slows down to look at the flowers and passes on slowly without the usual cloud of dust." One can almost imagine programs of home beautification taking the place of speed laws on rural highways.

When and How to Paint Farm Buildings, as presented in Chapter XI is a gospel much needed on the American farm, for many expensive buildings have been allowed to deteriorate rapidly for lack of a protective coat and many others have similarly deteriorated because of the use of inferior paint or poor workmanship. Under the headings When to Paint, What Paint to Use, How to Use the Paint, General Procedure in Mixing Paint, Formulas for Mixing Paint, and How Much Paint to Apply, a fund of detailed information is available for the farmer which should enable him to get more for his money in the protection and beautification of his buildings.

Part IV deals with the Economic and Financial Aspects of the Problem. In Chapter XII, Economists Hawthorne and Cooper of the United States Department of Agriculture, deal with the values of farmers' dwellings and their relation to farm incomes and capitalization. They present in concise form with tables, charts, and maps some very comprehensive data derived from the census, and special tabulations, by the Bureau of the Census, of data for the 28 counties mentioned in Chapter I, together with data derived from 66 localities in which farm management surveys have recently been made.

The average value of farm dwellings varies from $3708 in Connecticut to less than $500 in some of the southern states. The correlation between average farm incomes and value of farm dwellings by states is +.56. This, however, does not tell the whole story, as the authors point out, for in one county alone (Tioga, Pennsylvania) the range is from less than $250 to $7000, which suggests that the range in any one county or state may be as great as the range in the entire country. Further, while the correlation coefficient obtained is apparently highly significant, the extreme variations are not to be disregarded. For example, Nevada which

ranks first in cash income, ranks 17th in farm homes; California is second in income, ninth in homes; New Jersey is third in incomes, second in homes; and Montana is 10th in income but 35th in homes.

The chief difficulty in this chapter lies in the method of valuing farm homes. The technique is that of the farm management expert. "Value of all buildings and value of farmers' dwellings are the farmers' estimates of the value of these items in comparison with the value of the real estate." In other words, how much does this building add to the normal selling price of this farm as a business concern? This technique is perfectly legitimate when the problem is the analysis of the farm business. The value thus placed on the farm home bears no necessary relationship to its initial cost and very little to its replacement value, its present condition or its "use value" to the farm family. It is conceivable that identical homes on farms of different sizes or on farms in different regions might be very differently valued. A $7000 modern home on a North Dakota half-section would probably rate $2000 to $2500, while a $3000 house on an eighty in New England would rate as highly. It is evident that when the problem is the evaluation of living conditions in different areas or the comparison of rural houses with town or village houses, the figures derived require much explanation. For example, on pages 129 and 130 it is stated that "Of the 10,478 owned town and village dwellings for which information is available, only about 11 per cent are valued at less than $1000, while approximately 44 per cent of the farmers' dwellings on owner-operated farms in the counties in which these town and villages are located are valued at less than $1000. Also, almost 25 per cent of the town and village dwellings are valued at $5000 or more compared with only about 4 per cent of the farm dwellings on owner-operated farms. In the towns and villages there are more owned dwellings in the $3000 to $4999 value group than in any other class, while in the counties in which these towns and villages are located, there are more farmers' dwellings in the under $1000 group than in any other."

While statements like the above may be easily misinterpreted, it must not be forgotten that in this chapter there are many valuable data excellently handled.

Chapter XIII on Financing House Building and Improvement shows Edward H. Thomson, a member of the Committee, to be strangely out of touch with the materials of the report and somewhat out of sympathy with the expressed ideals of the committee. On page 140 he says: "It is probably true that a farmer has about as good a home as he can afford." This statement does not square with the conclusions of Kirkpatrick or the statement of the Introduction quoted above while in the Foreword Dr. Wilbur says, (1) "At the bottom of the lower standard of rural housing, there are long-established home habits and a good deal of mental inertia." (2) "If many farmers gave the same attention to perfecting the physical environment of their families, as they do in selecting and improving the environment of their plants and prize stock, the standard of rural housing would go to higher levels at once, regardless of agricultural incomes." (3) "As this volume points out, two things are essential—education and research."

Again, on page 144 Thomson says, "The facilities for financing dwellings as a part of the farm are more adequate than for financing homes in towns and villages of less than 2500 people."

This may be so theoretically, but in Chapter XIV where Dr. Frank Hill presents a scholarly summary of the financing of 3889 rural homes built or remodelled between January, 1926, and September, 1931, a totally different conclusion is reached. "Nearly ½ of the new farmhouses reported upon were paid for in cash from savings, insurance indemnities, or other personal funds (Table 5). About ⅓ of the village houses and about ⅖ of the houses built in the country by the nonagricultural group were paid for in cash." In remodeling operations 67.7 per cent of farmhouses were paid for in cash, 65.2 per cent of the village houses and 63.7 per cent of other rural houses.

Hill presents data on the average cost of new rural homes in 18 states and divides the data into farm, village, and other rural homes. The picture here presented shows the average cost of 970 farm homes to be $2789; the average for 312 village homes $3912; and the average for 266 other rural homes $3556. This gives the value of new farm homes as 71 per cent of the value of new village homes in the same regions, which is a different picture from that painted on pages 129 and 130, quoted above. Hill also compares his questionnaire data with the census data for the same states and the comparison reveals the justice of the above criticism regarding the use made of the census figures on farm home values. The table reveals a remarkable uniformity (excepting in the South) amongst widely scattered regions. The average value of new farmhouses in New York, Maryland, New Hampshire, Virginia, Indiana, Illinois, Wisconsin, South Dakota, Kansas, Wyoming, and Utah ranged between $3000 and $4000 while 87 new farmhouses in Minnesota averaged $4208 and two reports from Wyoming averaged $5600.

Remodelling operations were reported for 2343 homes of which 1540 were farm homes; the average amount spent in these alterations and installations was approximately $1000 and for farm homes $946. Hill analyzes also the amounts and sources of loans, as well as the terms, security and interest rates.

Part V deals with some special phases of the problem including Health and the Housing of Migratory Labor. Part VI is devoted to the educational aspects and herein Bruce L. Melvin, the research secretary of the committee, presents the main objectives, methods, and plans for further research and dissemination of knowledge. In presenting its recommendations the committee stresses the necessity for further research and urges the establishment of some central agency to act as a clearing house for information and to stimulate educational programs. It also calls upon the Bureau of the Census to provide additional data concerning farm families and dwellings in order to facilitate further research.

Appendix I reviews the agencies engaged in teaching and research work on farm and village housing. Appendix II deals with the Housing of the Indians while Appendix III, by no means the least important, gives a classified bibliography on Rural Housing.

R. W. Murchie
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Projected Waterways in North America as Related to Export of Wheat. Wheat Studies of the Food Research Institute, Vol. VIII, No. 9, Stanford University, California, August, 1932.

This is a useful contribution in a much disputed field. The problem to

be solved is whether wheat will be largely shipped over improved waterways which are being developed in Canada and in the United States; and, further, whether increased shipments, if they occur, will result in increased profits to the producer or in lowered prices to the foreign consumer. A number of attempts have been made to answer these pertinent questions, and opinions differ. The Stanford study strikes the reviewer as probably the best that has been published upon the subject. Its conclusions are, briefly: (1) that the Hudson Bay route is unimportant; (2) that the Mississippi River may provide facilities for the export of hard winter wheat from Kansas and Nebraska, but is unlikely to attract much wheat from states further north or south or to carry spring wheat at all; (3) that the St. Lawrence waterway will offer a saving of not to exceed five cents a bushel from the head of the Great Lakes to Europe, and that this saving will be divided between producer and consumer in proportions which will vary from year to year. The conclusion as to incidence is, by the way, consistent with the results of a detailed study recently published by M. R. Benedict on the effect of reductions in freight rates on South Dakota farmers. It is also the outcome which general reasoning would lead one to expect. Finally, (4) the gain from waterway improvement will be more important to Canada than to the United States, because the volume of American exports to which it will apply is small and presumably contracting. In Canada, however, most wheat grown is exported, and there are greater possibilities for increased production. Thus Canada stands to gain, possibly even at the expense of the United States.

Prophecy is proverbially dangerous unless it concerns times which are sufficiently remote; and it may be that the views expressed in the Stanford report will turn out to be as mistaken as estimates prepared by government authority or by local interests. The best guarantee that this will not be so is the known competence and independence of the directors of the Stanford Institute. There is another angle, however, from which to regard the report. One should remember that the conditions surrounding the entire waterway development program are extraordinary. It is proposed at a moment when the transportation machinery of the country is overbuilt, due to the construction of motor vehicles. There is no agreement as to what the new improvements will cost, nor even whether such items as to the deepening of Lake harbors to accommodate ocean ships are proper charges against the St. Lawrence project at all. And, speaking of the St. Lawrence alone, the forecasts of the volume of tonnage which will use the improved waterway vary from the 30,174,000 tons expected by the Great Lakes Tidewater Association to the 10,563,100 referred to in a study by the Brookings Institution. In view of this it seems fair to ask the proponents of waterway projects to secure some reasonable consensus of opinion among students unconnected with the controversy before the government is asked to go ahead. The Stanford study is an additional piece of evidence that no such favorable consensus exists. The style of the pamphlet is condensed, but clear, and the authors have shown commendable restraint in the use of tables.

Stuart Daggett

University of California

The Fall of Prices, a brief account of the facts, the problem, the causes and possible cures, by John A. Todd, Oxford University Press, London: Humphrey Milford, 1931, 68 pp. $.75.

This volume examines the thesis that the fall in prices since 1929 has been due to the inadequacy and the maldistribution of the world's gold supply. It finds that historically the connection between gold production and the general level of prices seems prima facie to exist only in the period from 1850 to 1914. "From 1914 onwards," p. 7, "this connection completely disappears." Nor does bank hoarding of gold seem responsible, inasmuch as "the serious fall of prices," p. 26, "has taken place during the period when the bank rate was low and the Reserve was high." "It seems, therefore," p. 31, "a reasonable conclusion that the fall of prices *since October, 1929,* has not been due to scarcity of money in any sense of the word, so far as this country" (England) "is concerned." Nor can the maldistribution of gold be said to have been a cause. True, the United States and France hold nearly 60 per cent of the world's total as against 40 per cent before the war. "But taking every country's holding in 1930 as a percentage on 1913," p. 33, "the worst offenders are apparently (in order) Japan, Spain, Great Britain, Switzerland, Belgium, and Australia." Moreover, America did not fail to make use of its gold, for the net deposit liabilities of its banks expanded by more than 50 per cent, so that the relative proportion of total gold backing actually declined. The fall in prices is, therefore, not due to gold.

The author then presents an alternative theory. This, in brief, consists of the thesis that the fall in prices is due to the world overproduction of wheat, sugar, cotton, wool, flax, hemp, jute, silk, copper, tin, rubber, and silver, combined with a reduced consumption in America. "It is at least a striking coincidence," p. 40, "that of all the commodities mainly affected, the *consumption is very largely in America.*" The fall in the average prices is, therefore, due to a *Konjunktur* of special commodity situations.

As possible cures, the author recommends as "one of the first things that will help to solve the present difficulty," p. 43, "a reduction of retail prices so that increased consumption may be induced, and the present surplus of raw materials gradually worked off." "The lead recently given by the German and Italian governments," p. 45, "in calling for drastic reduction of prices of manufactured goods wherever possible is one to be followed by every country." Other possible cures are increased gold production, economies in the use of gold, the use of more silver against notes, increased use of checks, and "an international clearing house," p. 55, "to do the same work for foreign trade as the clearing houses do for England."

Theodore J. Kreps

Stanford University

The Voluntary Domestic Allotment Plan for Wheat. Wheat Studies of the Food Research Institute, Vol. IX, No. 2, Stanford University, November, 1932. 62 pp. $1.00.

This study by Dr. Davis comes as a most welcome relief from all the pressure of propaganda concerning the domestic allotment plan. For months the air has been filled with the dust of arguments. Proponents for the plan, in its many and changing forms, have promised a wide range

of benefits to follow its adoption, while on the other hand the millers and the packers have attacked the proposal often with much heat and have presented arguments which to an impartial onlooker are obviously not supported by the facts.

This sixty-two page analysis from the Food Research Institute is free from all such taint of propaganda. From the laboratories of Stanford University, Dr. Davis and his associates endeavor to weigh the merits and faults of this program of farm relief in their scientific scales.

In following the published studies of this Research Institute, so far as I have been able, I have never failed to be impressed by the high standard of analysis evidenced by the various publications, but I have sometimes wondered whether or not the academic approach was as close to the soil as it might be. In this particular case a reasonable remoteness from the heat of political battle gives the study a peculiar value. To Dr. Davis the allotment plan with its many and often intricate provisions must stand the test of impartial and trained examination. On the whole, the judgment is sympathetic, yet several telling criticisms are levelled against the plan, which I have not seen presented elsewhere with anything like the same force.

It is only fair to state at the outset that this study is made of that domestic allotment plan as presented perhaps most clearly by Professor M. L. Wilson, and accepted in principle, it is believed, by President Franklin D. Roosevelt. The specific provisions are outlined in The Norbeck-Hope bills, presented to Congress in July, 1932.

Recently, of course, these bills have been much altered, and The Jones Bill, as passed by the House of Representatives, has been changed and loaded—heavily overloaded—with various other agricultural commodities to receive benefits besides those in the Norbeck-Hope schedules. Inasmuch as the Jones Bill has been found unacceptable to the Senate, as well as to the President, there is still reason to study the original proposals and their probable or possible effect upon agriculture and the country at large.

Dr. Davis strongly approves of the purpose of the allotment plan to link *production control* with a device to increase farm income. "Most of those familiar with the situation," he states, "regard reduction of wheat acreage as inevitable and essential, in the world at large and in this country in particular."

"The question is, how to bring this about. Compulsory reduction of wheat acreage appears quite impractical, and there is no hope of success from efforts to organize farmers for concerted reduction. The problem is to find some effective inducement to contraction which will supplement, and in part replace, the cruel instrument of low prices leading to bankruptcy of farmers."

"This," continues Dr. Davis, "the recent supporters of the domestic allotment plan think they have found."

As against the clear benefits to be gained from the adjustment of production more closely to consumer demand, the study brings out certain problems to be met and faced in the open.

Taking the simplest commodity to administer, wheat, there are at least 1,500,000 farms on which wheat has been grown in one or more of the past five years. To get a reliable basis for allotments, every one of these farms would have to be represented with approximately correct data for each year of the five. Inquiries among producers would be answered

largely on the basis not of records but of individual memories or estimates. It is also emphasized that it would be brought home to farmers in each locality that any overstatement by one farmer would be at the expense of other farmers in that locality, and that each would have a distinct self-interest in challenging any overstatement by a neighbor.

This procedure might be effective, Dr. Davis remarks, but it would seem to encourage a type of neighborhood spirit that is not wholly admirable.

Later on the task of ascertaining whether or not farmers operating under definite allotments were fulfilling their part of the contract would be exceedingly difficult to do well. For a committee to report non-fulfillment by a neighbor would be a serious matter because it would mean outright loss of the bonus upon which a producer had been counting. One may, therefore, doubt whether after a little experience, positions on these county and local allotment committees, where service will be purely voluntary, would be generally accepted by men well qualified to discharge the duties.

After a thorough discussion of the various administrative details of the adjustment of the wheat index with the general indexes and the tariff adjustment or equality charges, of the details of tax collections from processors, of the possible amounts of collections the first year and thereafter, etc., Dr. Davis raises the much larger issue of the resulting benefits to the farm population and to the nation as a whole.

He states positively "we do not share the belief that national prosperity can not return to the United States until the general farm price level is restored to a basis above cost of production. It seems to us unlikely that general farm prices will ever reach, for any extended period, a level that farm leaders would regard as above cost of production."

"Nor is it correct to reason that, because in a limited sense agriculture is basic, improvement in farm prices and farm purchasing power is a prerequisite for general recovery from depression. During the first postwar depression many argued that industry could not recover until agriculture did. This proved false. Industrial recovery preceded and outdistanced agricultural recovery, and was indeed responsible for much of the agricultural improvement that took place."

"Even if the domestic allotment plan should yield its maximum favorable results," Dr. Davis concludes, "it might still be true that, on the whole, farmers stand to gain much more from recovery in other lines, and from improvements in purchasing power, demand, and prices that may be expected to accompany it, than from any measure for farm relief at the *direct expense of another part of society.*"

These quotations are quite inadequate to represent the very stimulating and thought provoking arguments presented throughout this most readable study. No one desiring to look down underneath the surface, ready to push aside the cover of propaganda, should fail to read this particular study of the domestic allotment plan as it applies especially to wheat, published by the Food Research Institute of Stanford University.

Harper Sibley

Sibley Farms
Sibley, Illinois

Farm Accountancy. Statistics for 1928-29. [Bureau of Economic and Social Studies], International Institute of Agriculture, Rome. 1932. Treves, Treccani, Tuminelli, sales agents. Pp. civ, 278. 50 lire. [In French, with tabular headings translated.]

This volume is the second in the series of publications of the project of the Institute to assemble each year the results taken from farm accounting offices in the several countries, 16 in Europe.[1] Progress is noted in the number of farms covered, in the handling of data, and in the presentation of the results. Limitations on uses of the data have not been entirely lifted, but these have been clearly stated; they chiefly forestall unwarranted implications which association in the tables (positions) and the use of a single money unit (the gold franc) might suggest.

The statistical section presents the farm organization and the results of operations for 8520 small holdings (peasant farms) averaging 26.5 hectares in size, and for 1416 larger holdings, averaging 215 hectares, in 16 European countries in detail by countries, regions, scale of farming, type of farming, and size of farm. The accounting back of the results was done according to Dr. E. Laur's plan (definitions and procedure). A vivid idea of farm business in the several classes and countries may be obtained, even though it is not yet possible to state the extent of the representativeness of the several samples, which are small.

This volume is enriched by a large amount of supplementary information on climate, soils, topography, phenological conditions, and general statistics useful to persons not interested in the accounting results, besides the technical notes explanatory of the accounting, but these are in French only.

S. W. Mendum

Bureau of Agricultural Economics

The World Wheat Situation, 1931-32. Wheat Studies of the Food Research Institute, Vol. IX, No. 3, Stanford University, December, 1932. 136 pp. $1.00.

This is a publication of 76 quarto (8½ x 11) pages, double column, six lines to the inch. There are 28 charts, an appendix with 36 tables, many explanatory and reference footnotes and a few short comparative tables in the body of the text.

The four chapters of this review discuss I—World Wheat Supplies; II—Governmental Operations and Regulations; III—Wheat Prices, and IV—International Trade and Consumption.

As the title implies, the publication is a review of the wheat season of 1931-1932, being one of a series of yearly reviews, since 1924-1925; but the relation of the 1931-1932 season to preceding seasons, is well blended in the text as well as shown in the charts and tables.

The special feature of this publication (as distinguished from previous reviews), is the chapter on government operations and regulations. Never before, at least in modern times and in a comparatively peaceful year, had so many governments seriously engaged in price-sustaining activities. In some exporting countries the year witnessed a drift toward acknowledgment that national measures previously applied, in the effort to stem the decline of wheat prices and to improve the position of domestic wheat

[1] For review of the first volume see JOURNAL OF FARM ECONOMICS, 14:3, July, 1932, p. 512.

producers, were too costly to continue. In the United States liquidation, in contrast with the preceding accumulation, characterized stabilization operations in the year under review. In importing countries changes in basic import duties were not numerous in 1931-1932. The general tendency was to rely upon other devices to maintain domestic wheat price levels; most changes in wheat duties were in the nature of special adjustments.

Students of agricultural economics who wish to be informed as to actions by various governments to support the price of wheat, but who do not care to go deeply into details, will find what they want in this chapter.

The chapter on world wheat supplies, strikes the dominant key in its first sentence, viz., "Stocks of old-crop wheat stood at record heights as the crop year opened." The excess was almost entirely in North America. United States wheat alone made up nearly 45 per cent of the world carry over, a record proportion. Early in the season it was expected that the world wheat crop would fall short of the preceding crop by 200 to 300 million bushels, thus offsetting effects of large initial stocks; but harvests exceeded early forecasts and nearly equalled the crop of the year before. The persistence of abnormally heavy stocks and the continued recurrence of huge world supplies were dominent factors in this crop year.

In the discussion of prices we find the following statement: "The main fact pertinent to a review of the crop year 1931-1932 stands forth clearly: international wheat prices, whether adjusted or unadjusted for changes in wholesale prices in general, ruled at a level which, within the experience of the present generation, was unprecedentedly low." The charts, as well as the texts show that wheat prices (except in countries with high import duties) declined more precipitately in the two crop years 1929-1930 and 1930-1931, than in 1931-1932, but that prices in 1931-1932, although more stable, were at lower levels. In France, Germany, and Italy, important importing countries with high protective measures, the domestic prices of wheat have been relatively well sustained.

Much has been said about the effect of the governmental stabilization operations in the United States on wheat prices. On this subject the review says: "Members of the grain trade have occasionally ascribed the low prices in 1931-1932 directly to governmental stabilization operations in the United States, apparently reasoning that since the price was higher before stabilization than after, stabilization caused the change. Detailed analysis of this reasoning is unnecessary here. Stabilization operations brought into visible positions in the United States wheat that otherwise would have been less prominently displayed, and probably weakened private disposition to hold stocks. It may also have tended somewhat to restrain wheat consumption and to maintain production, thus serving to build up carryovers. Yet it had no connection with the big world wheat crop of 1928, or with the return of Russia to the world wheat market, and no direct connection with the onset and progress of recession. In the absence of stabilization operations the world wheat price probably would not have fallen exactly as it did fall from August, 1929, to July, 1931. The course of prices was affected; but there is little reason to suppose that stabilization materially affected major shifts in level of world wheat prices. Stabilization operations were of major importance in affecting the spreads between United States and foreign prices, and the course of

United States prices themselves. This influence, however, was much smaller in 1931-1932 than in 1930-1931."

This quotation is a fair example of the conservativeness and care of expressions in the whole work.

The course of international wheat shipments in 1931-1932 was broadly similar to that in the preceding year. But it is pointed out that for the first time in history, Argentina and Australia together exported nearly as much as North America. Prior to 1929-1930, North America had for several years contributed around 60 per cent of the world wheat trade; in the past three years its share declined to barely 40 per cent in 1931-1932.

Net imports of wheat and flour into importing Europe were light in 1931-1932; but total shipments to ex-European countries (other than India) were almost as large in 1931-1932 as in the year of maximum movement (1928-1929) when India took nearly 28 million bushels, and larger than any other year.

World wheat consumption (within those countries of the world for which usable estimates of crops, exports or imports, or stocks are available) that is, the aggregate disappearance was higher in 1931-1932 than ever before; due mainly to extensive use of wheat for feed, and to heavy exports to outside areas, notably China.

Referring to the present, 1932-1933, season the statement is made that total wheat supplies seem to be about equal to those for 1931-1932 (the reviewer's estimate is about 100 million less). Certain stimuli to heavy feed use of wheat that were present in 1931-1932 are lacking in 1932-1933. It remains to be seen whether a fifth successive year of burdensome wheat surplus will drive home to legislators throughout the world the pressing need for reduction of trade barriers that restrain consumption and for abandonment of measures that tend to maintain or increase wheat acreage.

The publication here reviewed was written mainly by M. K. Bennett and Joseph S. Davis, with the aid of Robert F. Lundy on tables and P. Stanley King on charts, and the counsel of Helen C. Farnsworth, Alonzo E. Taylor, and Holbrook Working. Ada F. Wyman contributed the discussion of governmental measures abroad.

The "Wheat Studies" of the Food Research Institute, of which the publication reviewed is one of the series, have attained an unusually high standard of thoroughness and accuracy. The reviewer often refers to these publications, especially the statistical data (because he has confidence in the care of their preparation, and because of convenient form of presentation) even when the data are available to him from other sources.

Nat C. Murray

Chicago

The Decline of Northwestern Flour Milling, by Victor G. Pickett and Roland S. Vaile. Minneapolis: The University of Minnesota Press. 1933. 83 pp. $.75.

This publication is the result of a comprehensive study made to determine the underlying factors which have been influential as causes of the decline of flour milling in the Northwest and the increasing importance of this industry in the Southwest and Buffalo. It is not only a detailed

description of the transition that has occurred, but also a clear and definite analysis of the degree of shift, the causes of the shift, and the consequences. In the case of some industries, changes in location may be explained by changes in transportation rates and facilities, but in the case of the flour milling industry, the transition is related to a multiplicity of causes, no one of which can be studied adequately without an evaluation of the others. It is in connection with the identification of the various factors and the evaluation of each as to its special influence, that the publication deserves particular credit. This work should be of value to those who are interested in the changing tendencies of American industries and who desire a concrete exposition of the underlying causes of the changes which have, or are occurring in one of the major industries.

Part I presents a historical survey of the wheat milling industry. The necessary statistical data are provided in order to show the past and present status of the various milling centers, and the present competitive situation as regards the relationship of producing areas to consuming areas.

Part II is devoted in the main to the analysis of the causes of the shifts which have occurred, and which have resulted in the decline of northwestern flour milling. The Northwest rose to first importance in wheat milling operations because of the high quality of spring wheat and its adaptability to cultivation in this region. In later years, there occurred a decline, both in yield and quality of this type of wheat. During the same period, a choice hard winter wheat was replacing the soft winter wheat types in the southwestern territory. With these developments, and the exclusion of Canadian wheat from the United States, the millers of the Northwest became interested in the Southwest, not only as a source of supply for their operations in the Northwest, but also as a location of their mills.

Accompanying the change to hard winter wheat varieties in the southwestern territory, there developed significant changes in demand and in marketing methods that increased the commercial success of the southwestern millers. In 1900, the greater proportion of flour sales was made direct from the mills to the retail grocer in carload quantities. The advent of the distribution of flour in less than carload shipments, resulted in the entrance of the jobber in the distributing system and contributed to the decline in demand for flour milled from hard spring wheat. "This displaced the direct touch that had helped the Northwest miller to sell to retailers on the basis of quality. It also increased the importance of price as a buying motive and reduced the business of spring wheat mills." The distribution of flour in less than carload shipments and the increase in the interstate carload minimum also effected the closing of several small milling plants or their absorption by larger companies with strong selling services. The larger organizations were better prepared than their smaller competitors to conduct intensive campaigns necessary to build up jobbing centers and to conduct extensive national advertising.

The growth of bakeries and the increased use of machine methods in baking are emphasized as causes of the changed demand for hard spring wheat flour. The subsequent strong competition in the sale of bakery products that followed the rapid development of bakeries, tended to lower the price of bread and consequently, favored the purchase of cheap flour, and directed buying away from the Northwest where prices were higher

than in other sections. The use of machinery has improved the quality of bread made from a certain grade of flour and, therefore, encourages the use of flour of less strength. "As the bakeries have developed machine baking and have grown in size, the drift has been away from short patent flour and toward the selection of hard winter wheat rather than spring wheat flour." The growth and mechanization of baking operations and the improvement and extension of hard winter wheat varieties were concurrent developments, and the significance of the influence of mechanization on the increased use of hard winter wheat is probably less than is implied, when the influence of the relative prices of hard and spring wheat flours is taken into consideration.

The growth of chain stores has decreased the demand for flour made from spring wheat. Chain stores make practically no distinction between spring and hard winter wheat flour, in consequence, the greatest volume of their business goes to the Southwest where prices are lower.

The freight rate structure, as it has existed and exists at the present time, accounts in part for the advantages that Buffalo possesses over Minneapolis relative to the production of flour for domestic use in the eastern territory. Buffalo still obtains wheat from Duluth at prewar rates and, therefore, has a price advantage on flour in eastern trunk territory that practically prohibits competition from the Northwest. In addition, the mills in Buffalo can make delivery of flour quicker and in better condition. "Although Buffalo mills have been able to obtain northwestern wheat, mill it and deliver it to eastern points more cheaply than Minneapolis mills can deliver flour from the same wheat, they have had no advantage at all over southwestern mills on southwestern wheat. Since the price ranges of southwestern wheats have been lower than of northwestern wheats and since the flour yield from winter wheat is usually greater than from spring wheat, the Southwest has been able to obtain a large volume of business not available to Buffalo mills on account of prices."

The export flour business has been lost largely by the Northwest because of the milling-in-bond privilege, which has permitted the manufacture of spring wheat flour from Canadian wheat more cheaply than it can be made from domestic wheat. The increase in amount of flour milled for export and the great decline of milling for export in Minneapolis account for a consilerable percentage of the transfer to Buffalo of Minneapolis milling operations.

The authors conclude that the desirable shifts in the milling industry have been made, so that the present location and capacities of mills are well adjusted to the wheat producing areas, to advantageous transportation facilities, and to the most economical and satisfactory service to flour consumers.

This study is an excellent analysis of the changes that have taken place in the flour milling industry. The factors which account for these changes are very complex and interact on one another. The authors have succeeded in tracing out the factors involved, and have exercised sound judgment in the evaluation of their individual and collective influence.

R. W. Cox

University of Minnesota

NEWS ITEMS

The Department of Agricultural Economics and Farm Management, Cornell University, has moved into its new building, where for the first time in many years the Department is under one roof with adequate space and facilities for teaching and research work.

The sixth annual Cooperative Marketing School, held by the University of Arkansas College of Agriculture in cooperation with the state cooperative associations, was held in Little Rock, February 21 to 23. During the meeting the name of the Arkansas Cooperative Council, which is affiliated with the National Cooperative Council, was changed to Arkansas Council for Agriculture. C. G. Henry, President of the Mid-South Cotton Growers Association, and E. H. Reed, Extension Economist, were re-elected President and Secretary of the Council.

A series of bi-monthly seminars have been inaugurated at Oregon State College for discussion of current agricultural economic problems and institutional activities in connection with them. Following a recent discussion of the farm mortgage situation and the Iowa plan of state and county farm mortgage adjustment committees, a similar plan has been organized in Oregon.

The Department of Rural Economics, Ohio State University held a farm land appraisers short course February 15 and 16 with 37 persons in attendance.

The members of the University of Idaho at Moscow and the State College of Washington at Pullman, who are engaged in extension teaching and research in the social sciences have perfected an informal organization for consideration of various subjects of mutual interest. The combined group meet bi-monthly, the meetings alternating between the two institutions.

W. H. Atzenweiler and R. D. Nichols, formerly with the Kansas State College and the United States Department of Agriculture, are now employed by the Bartlett Mortgage Company of Saint Joseph, Mo. Their work consists of services to the operators of delinquent lands and possessed lands.

Death recently ended 50 years of continuous faithful voluntary service as an official crop observer of the United States Department of Agriculture and of the Missouri State Board of Agriculture on the part of S. G. Beatty, of Macon, Mo. No other farmer in Missouri has equalled that record.

Mr. George F. Dow, Associate Agricultural Economist of the Maine Agricultural Experiment Station, is on leave of absence to do graduate work towards his Ph.D. degree at Cornell University during the present college year.

Dr. C. H. Eckles, Chief of the Division of Dairy Husbandry, University of Minnesota, whose outstanding work in the dairy field is well known to agricultural economists, died on February 13.

Dr. Mordecai Ezekiel, recently on the staff of the Federal Farm Board has been selected as economic advisor to the Secretary of Agriculture.

Mr. Herbert Gaston, recently deputy commissioner of the State Department of Conservation, New York, has been appointed secretary of the Federal Farm Board.

Mr. Fred Jans, formerly extension economist in farm management demonstrations, Colorado Agricultural College, in charge of this work in the eastern plains area of Colorado, has been transferred to the administration division of the Extension Service. This will mean a reduction of farm management demonstrators in Colorado from four to three.

Miss Mary G. Lacy, Librarian of the Bureau of Agricultural Economics, is editor of a new department in "Government Statistics," in Special Libraries, the organ of the Special Libraries Association. Lists of annual publications have been compiled, and there are notations of other publications which show how the statistics may be brought to date.

Mr. Valentine Malitsky, formerly a graduate student at the University of Minnesota, is spending the year in Washington as holder of a fellowship of the Brookings Institution. He is conducting an investigation of Russian agriculture before and after the Revolution.

Dr. W. I. Myers, of Cornell University, has been granted a leave of absence that he may serve as assistant to the chairman of the Federal Farm Board.

Mr. J. H. Shollenberger, grain specialist of the Foreign Agricultural Service, Bureau of Agricultural Economics, studying qualities of wheat in Europe, has transferred his headquarters from London to Berlin.

Mr. J. C. Stone resigned as chairman of the Federal Farm Board, effective March 4. Henry Morgenthau, Jr., has been appointed to fill the vacancy.

Dr. Rexford G. Tugwell, Professor of Economics at Columbia University has been appointed Assistant Secretary of Agriculture, succeeding R. W. Dunlap who has returned to his farm in Ohio.

Mr. H. A. Wallace, of Des Moines, Iowa, assumed his duties as Secretary of Agriculture on March 4.

The Third International Conference of Agricultural Economists

Will be held at Bad Eilsen, South Hanover, Germany, August 21 to 28, inc.

Bad Eilsen is delightfully situated among richly-wooded surroundings in the valley of the Weser, close to the Porta Westfalica.

Hotel Accommodations

Hotel accommodations range from RM. 5.50 to 13.50 per day. These rates are for room, board and gratuities. An additional charge of 1 RM per day will be made to cover Conference expenses. There are facilities for tennis, golf, and other recreations.

Tours

Two fourteen-day excursions by motor-coach are planned in connection with the Conference. Each journey covers a distance of from 950-1,250 miles. The cost is approximated at RM. 300, which will be reduced if a goodly number participate.

Tour A: Eastern Germany, August 5-19. This trip is through Holstein, Pomerania and the Polish Corridor to East Prussia. Grain and livestock farming predominate. Magnificent scenery. It is a region of large (Rittergüter) holdings.

Tour B: Western and Southern Germany, August 28-September 11. Organized principally for Members who are interested in dairying, horticulture, forestry, and the tobacco and hop industries. It includes the Black Forest and the Rhine country.

Several shorter tours will take place in the neighborhood of Bad Eilsen during the week of the Conference.

Those planning to attend or desiring further details regarding this Conference should address one of the following:

H. C. M. Case, University of Illinois, Urbana, Illinois
Asher Hobson, University of Wisconsin, Madison, Wisconsin
C. E. Ladd, Cornell University, Ithaca, New York
G. F. Warren, Cornell University, Ithaca, New York

See page 216 of the January number of the JOURNAL OF FARM ECONOMICS for the Conference Program.